



# TDOT's Journey to Integrated Corridor Management

May 26, 2022

# TDOT's Journey to Integrated Corridor Management

## Agenda

### – I-24 SC

- Intro: Purpose and Need, Mission and Vision
- Our Solution: I-24 Smart Corridor
- Project Phases 1-3
- Project Schedule and Status
- Initial ICM Operation and Maintenance Needs
- Lane Control System (LCS) and Variable Speed Limits (VSL)
- Public Outreach for Project
- Artificial Intelligence (AI) powered Decision Support System (DSS)
- Challenges for Initial ICM Deployment in Tennessee
- Next Steps

### – SWCS Upgrades

- ATMS upgrade and background
- ICM Decision Support System
- SWCS Expansion – Next Steps



# What is ICM?

**Integrated corridor management (ICM)** -- the coordination of transportation operations to improve travel management



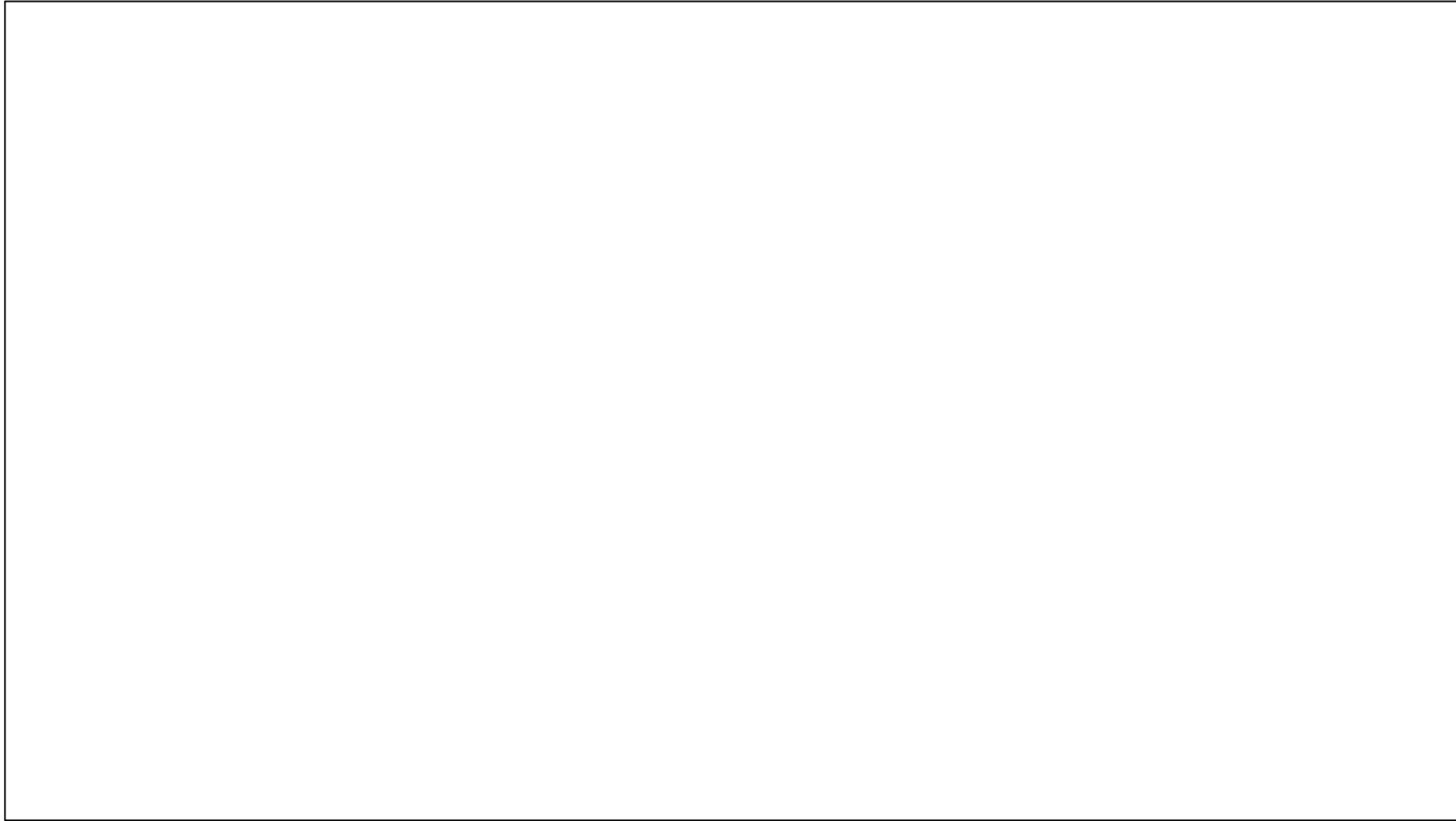
# I-24 SMART Corridor Update



[WWW.TN.GOV/TDOT/PROJECTS/REGION-3/I-24-SMART-CORRIDOR](http://WWW.TN.GOV/TDOT/PROJECTS/REGION-3/I-24-SMART-CORRIDOR)

<https://www.youtube.com/watch?v=c5HOIYXyszs>

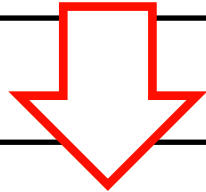
# I-24 SMART Corridor Update



# I-24 Smart Corridor Mission & Goals

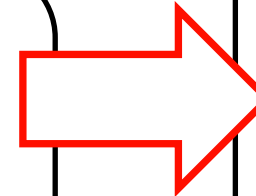
## TDOT Mission:

*To provide a **safe and reliable transportation system** that supports economic growth and quality of life.*



## I-24 Smart Corridor Mission:

*To improve the **safety and reliability of all travel** along the corridor through the proactive management of intelligent and connected infrastructure, and the formation of strong operational partnerships between local and state agency stakeholders.*



## I-24 Smart Corridor Goals:

*Goal 1: Increase Travel Time Reliability*

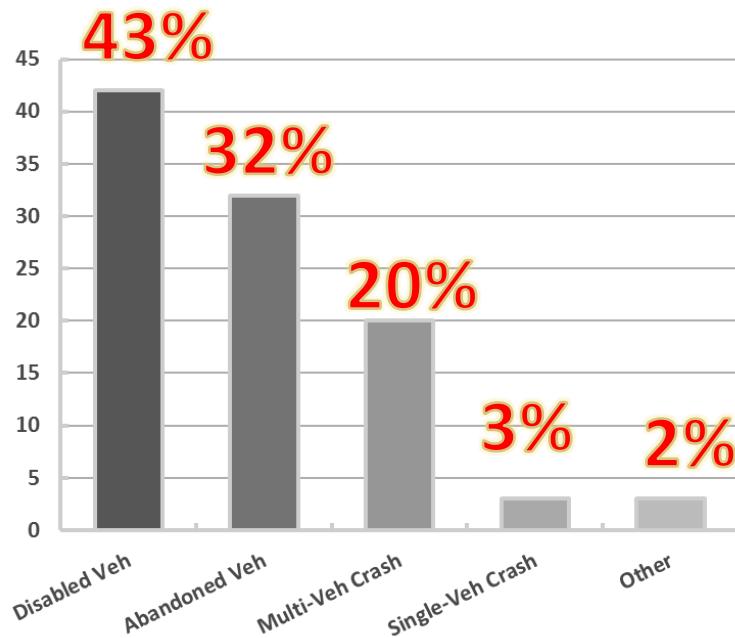
*Goal 2: Increase Mobility of all Modes*

*Goal 3: Reduce the Concentration of Crashes*

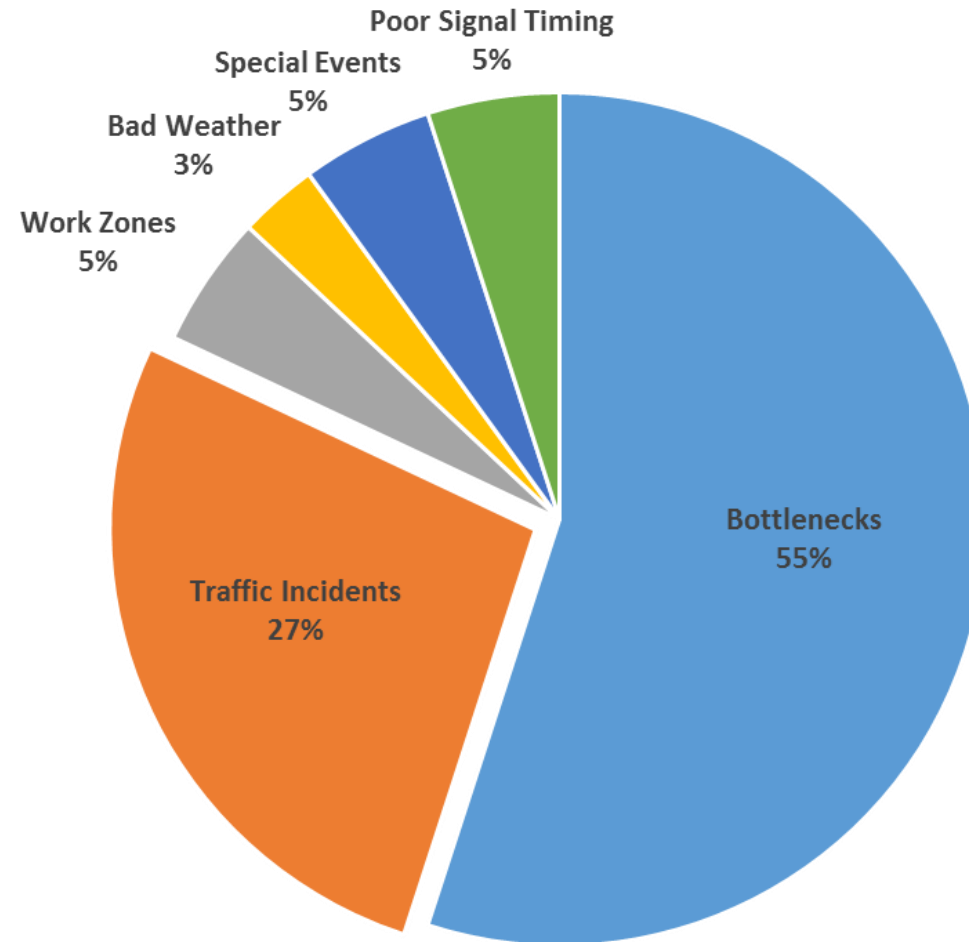
*Goal 4: Develop Agency Coordination*

# I-24 Congestion Contributors

## Traffic Incidents 27%



Incidents Breakdown 2015  
(Total Crashes:1,661)



Contributors to Congestion

# I-24 Smart Corridor Purpose and Need

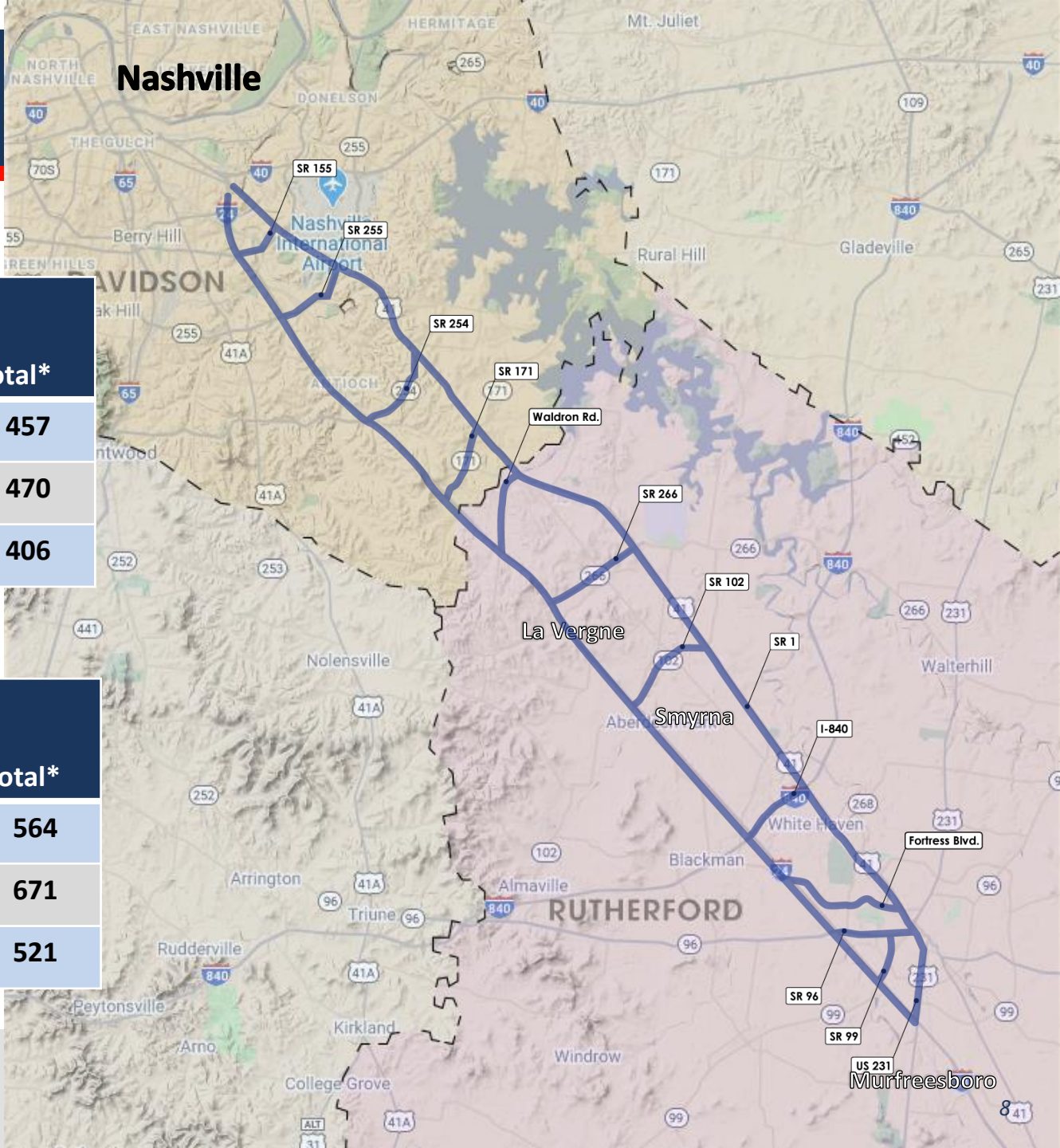
## Safety

| I-24  | Fatal Crashes | Major Injury Crashes | Minor Injury Crashes | Prop Damage Crashes | Total | Total* |
|-------|---------------|----------------------|----------------------|---------------------|-------|--------|
| 2018  | 5             | 26                   | 184                  | 567                 | 776   | 457    |
| 2019  | 3             | 10                   | 200                  | 663                 | 876   | 470    |
| 2020* | 1             | 17                   | 82                   | 306                 |       | 406    |

\*Data as of mid-August 2020

| SR-1  | Fatal Crashes | Major Injury Crashes | Minor Injury Crashes | Prop Damage Crashes | Total | Total* |
|-------|---------------|----------------------|----------------------|---------------------|-------|--------|
| 2018  | 2             | 14                   | 223                  | 764                 | 1003  | 564    |
| 2019  | 4             | 23                   | 261                  | 802                 | 1090  | 671    |
| 2020* | 3             | 10                   | 126                  | 372                 |       | 521    |

\*Data as of mid-August 2020



## I-24 Smart Corridor Purpose and Need

# Reliability

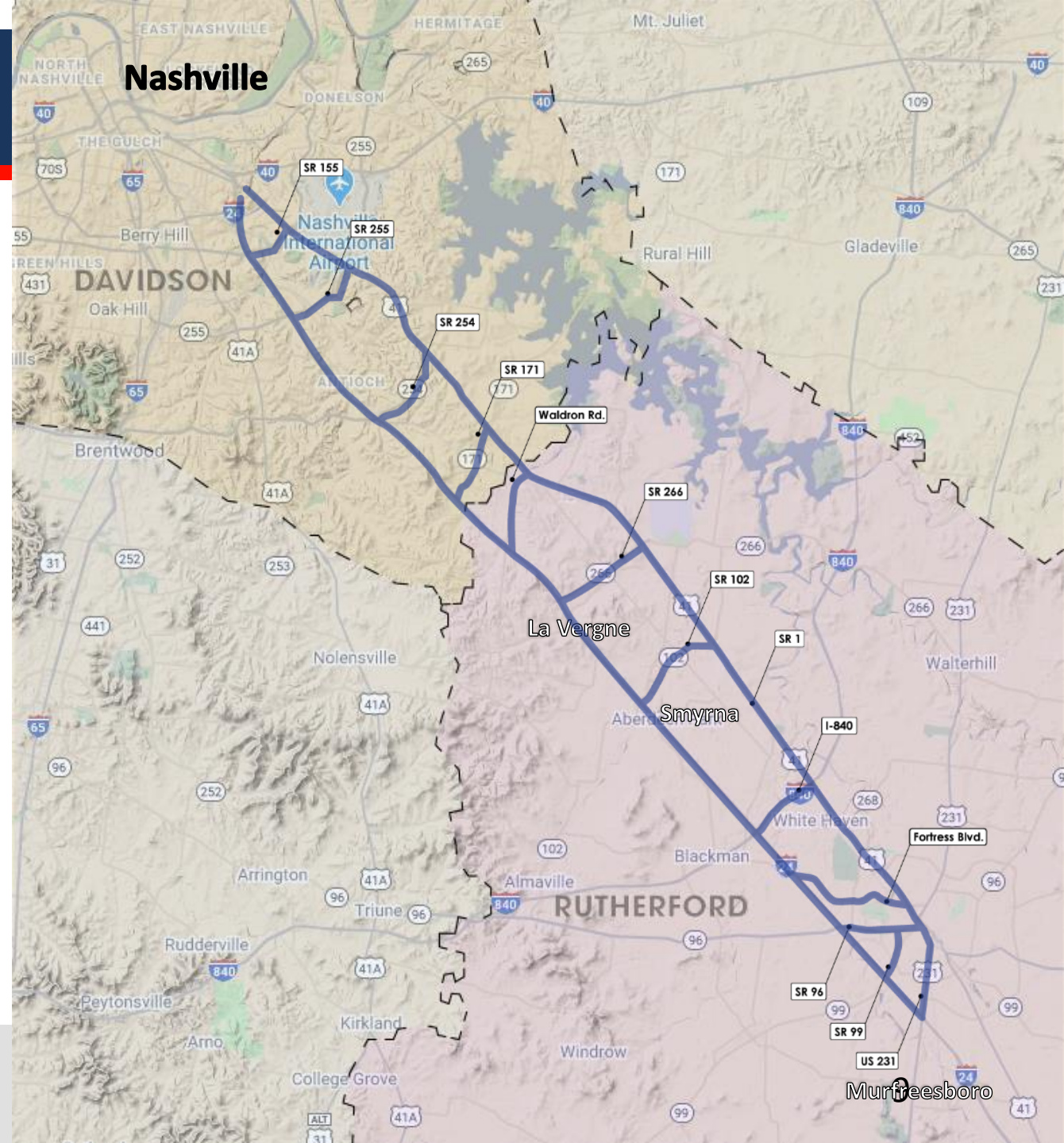
## System Wide Peak Periods:

**6:30 am – 8:30 am and 4:00 pm – 6:00 pm**

| I-24 | AM Peak<br>Travel Time<br>Index (TTI) | PM Peak<br>Travel Time<br>Index (TTI) |
|------|---------------------------------------|---------------------------------------|
| 2018 | 1.52                                  | 1.35                                  |
| 2019 | 1.38                                  | 1.40                                  |

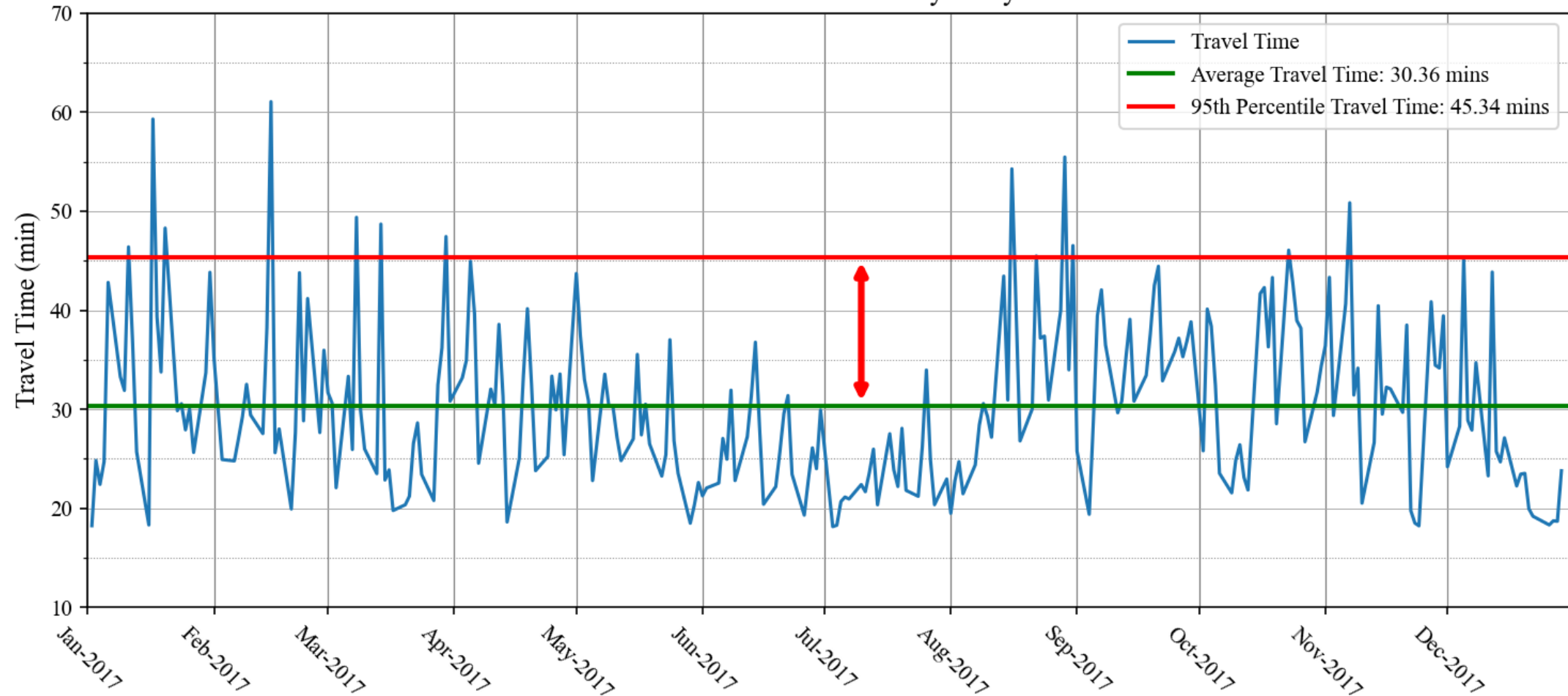
| SR-1 | AM Peak<br>Travel Time<br>Index (TTI) | PM Peak<br>Travel Time<br>Index (TTI) |
|------|---------------------------------------|---------------------------------------|
| 2018 | 1.31                                  | 1.48                                  |
| 2019 | 1.19                                  | 1.39                                  |

Based on weekday averages (M-F)



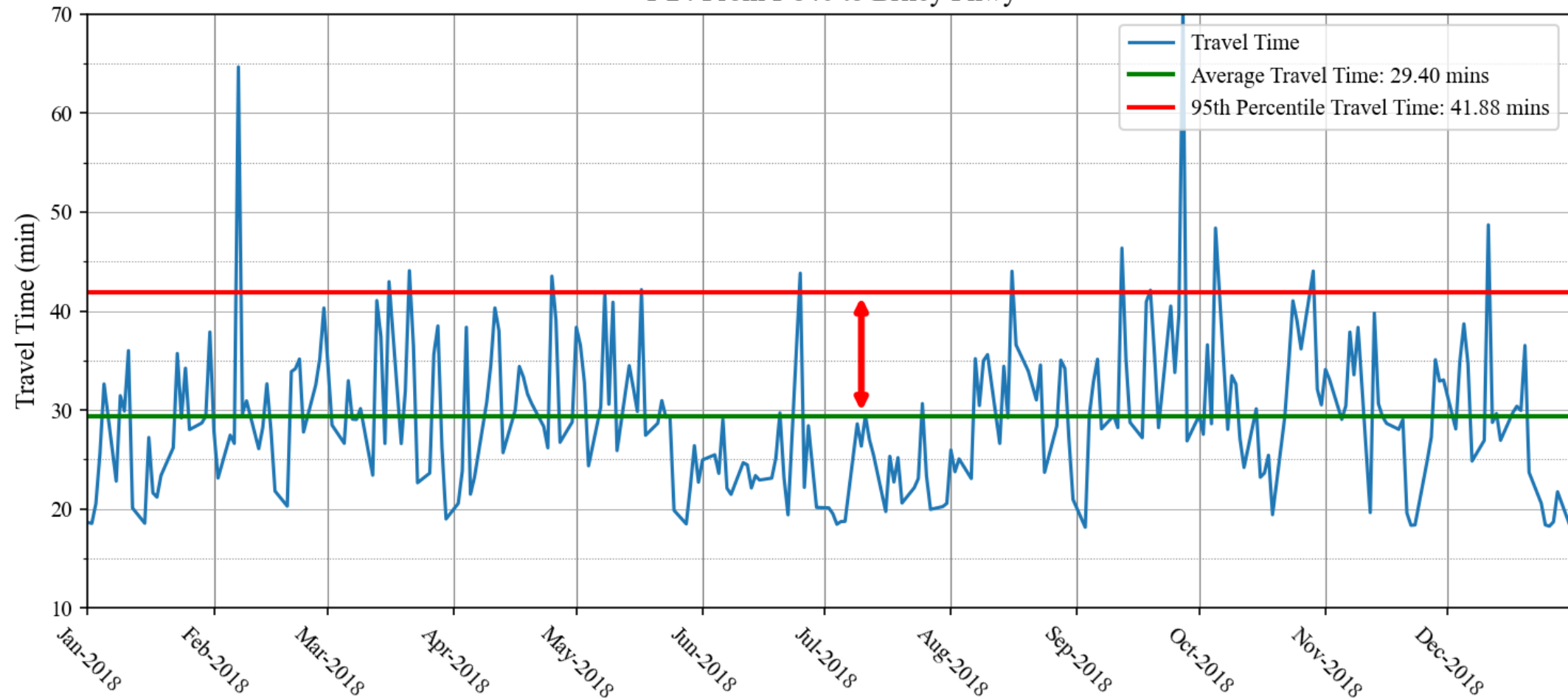
# Historical Travel Time Data - 2017

Weekday AM Peak Period Travel Time  
I-24 From I-840 to Briley Pkwy



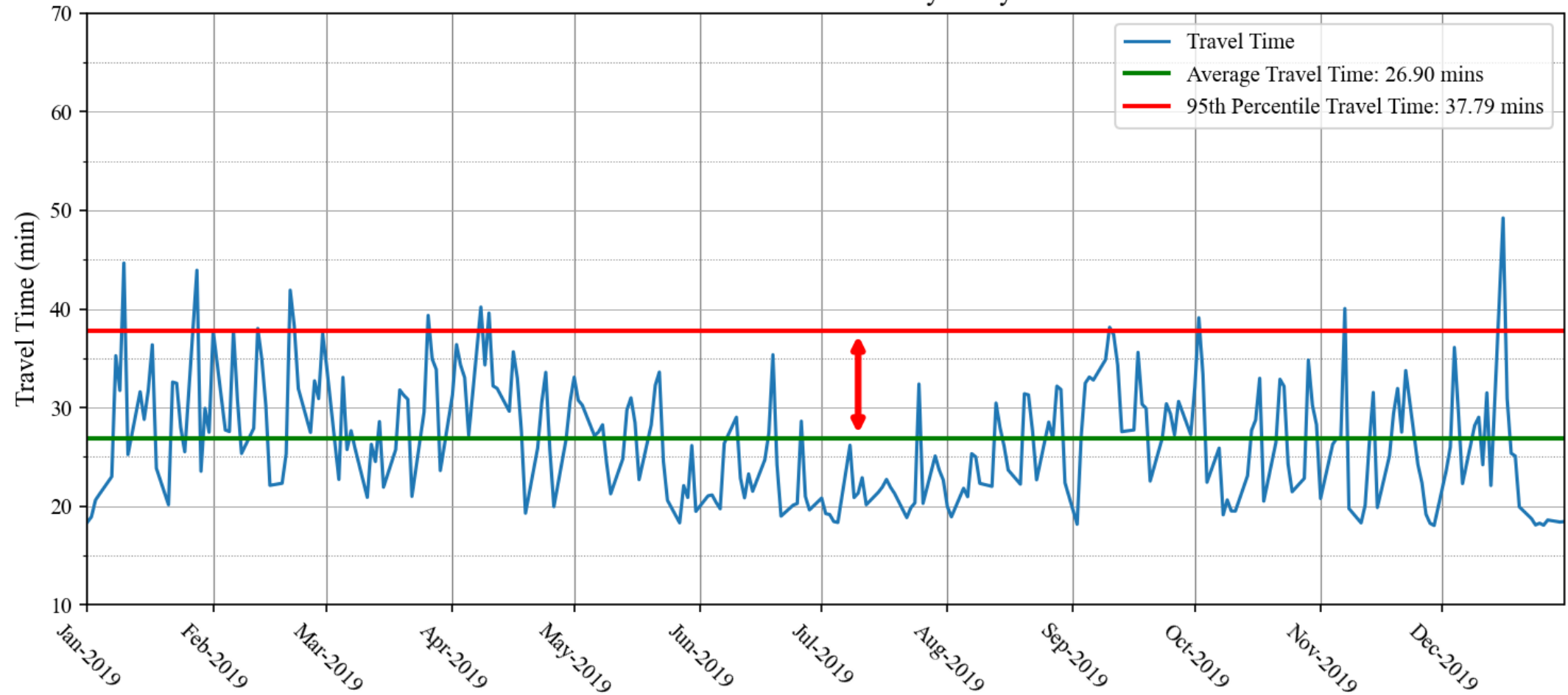
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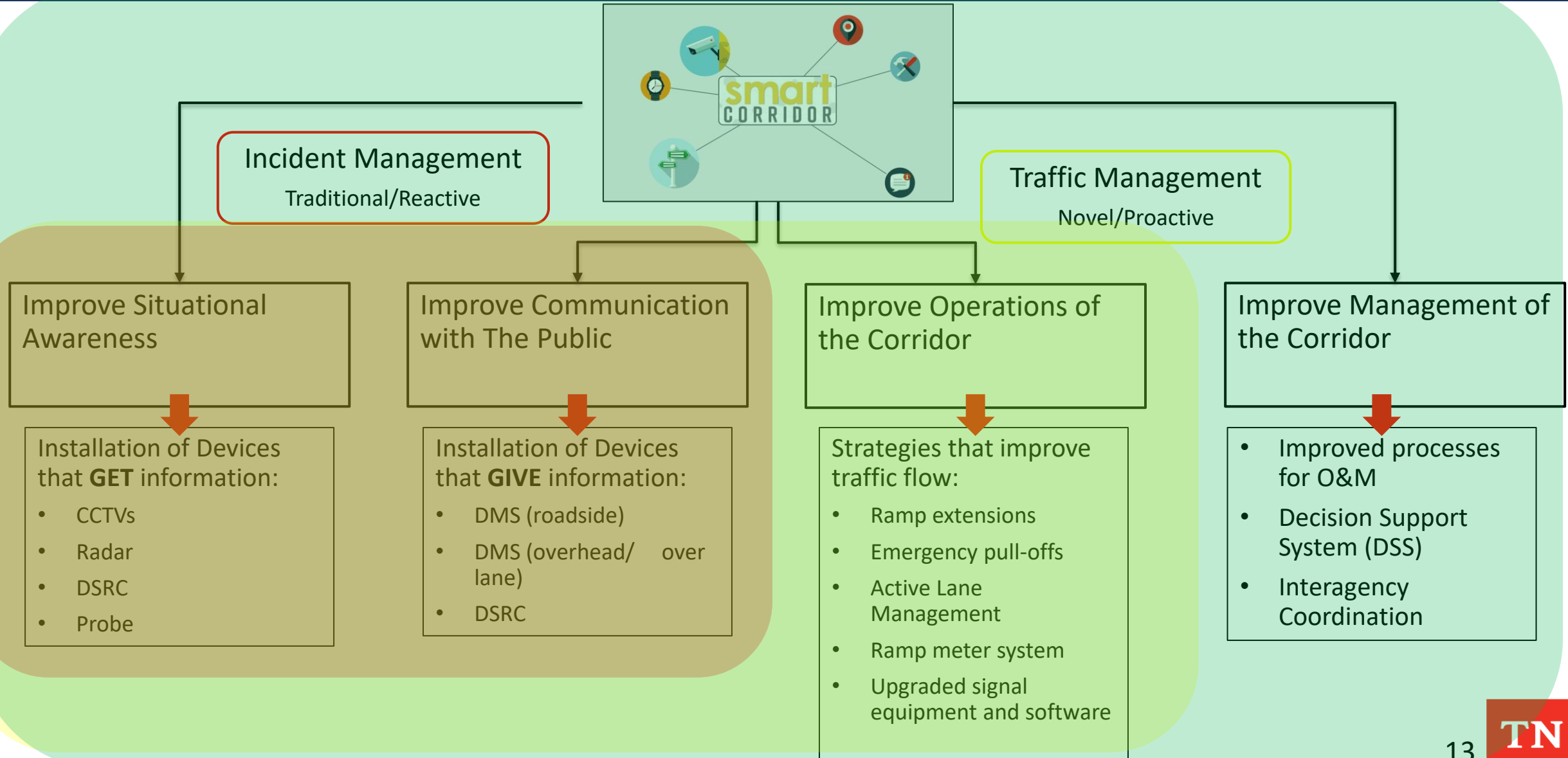
# Historical Travel Time Data - 2019

Weekday AM Peak Period Travel Time  
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# Our Solution: I-24 Smart Corridor

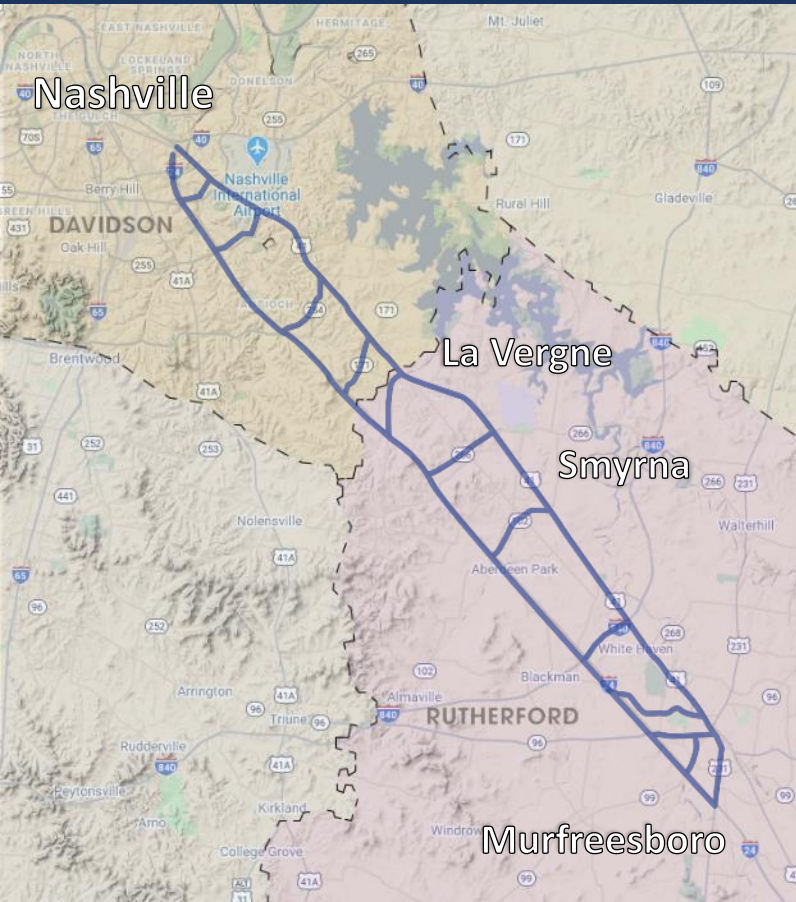
## Integrated Corridor Management (ICM)



# I-24 SMART Corridor Project Partners



# Phases 1 & 2



**Length:** 94.10 Total Miles (29.5 Miles along I-24)

## Termini:

- I-24 from I-440 to SR-231
- SR-1/US 41 from I-24 to SR-231
- Various connector routes

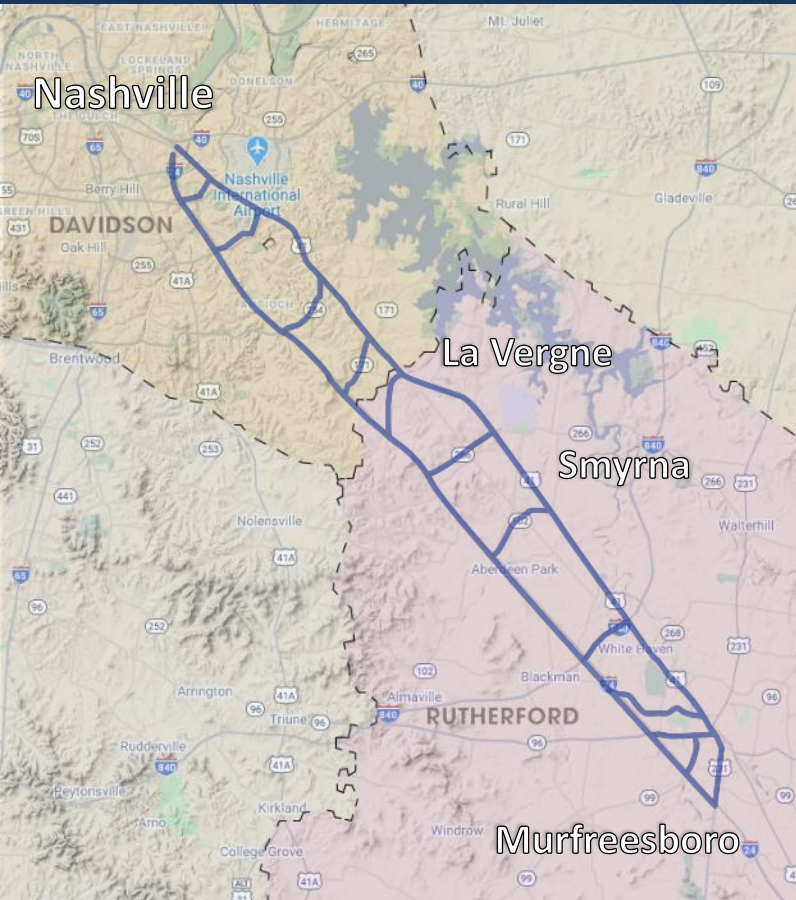
## Phase 1

- **Scope of Work:**
- ITS and signal improvements on all project roadways
- Connected Vehicle Infrastructure
- Interchange ramp improvements along I-24
- Emergency pull-offs along I-24
- **Let to Contract:** October 2018
- **Contractor:** Stansell Electric
- **Completion:** December 2021

## Phase 2

- **Scope of Work:**
- Install 67 overhead dynamic message signs (LCS and VSL) on I-24 between I-440 and SR-102
- Traffic Signal upgrades: radar and video detection
- Implement Active Traffic Management (Arterial & Freeway)
- **Let to Contract:** October 2019
- **Contractor:** Stansell Electric
- **Estimated Completion:**  
\*May 2023

# Phase 3



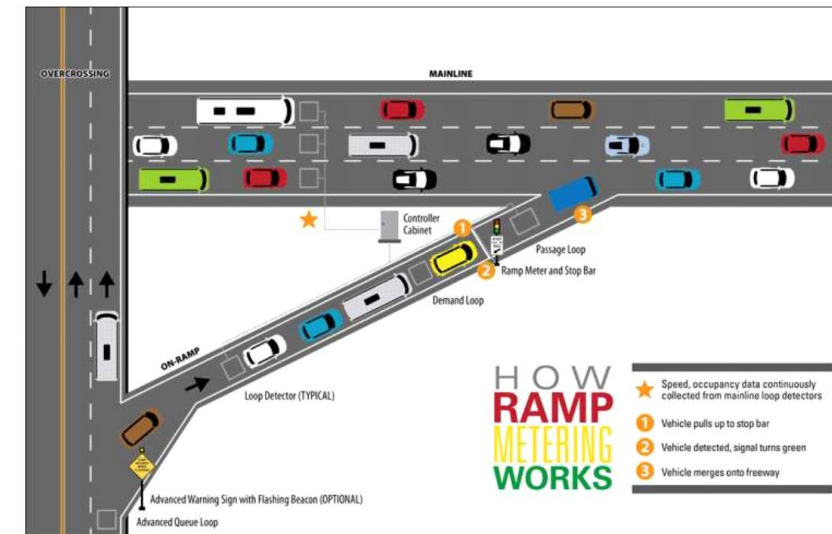
- **Phase 3**
- **Length:** 94.10 Miles
- **Termini:**
  - I-24 from I-440 to SR-231
  - SR-1 from I-24 to SR-231
  - Various connector routes
- **Scope of Work:**
  - Ramp Meters
  - Arterial DMS
  - Arterial CCTV Cameras
  - Communication upgrades
  - Intersection Operations Improvements (ADA, Pedestrian Signals, etc)
- **Earliest Letting:** CY 2023

# Ramp Meter Selection

- Final ramp meter analysis report to be submitted this summer
  - HELPER Algorithm selected and will be optimized for the I-24 Smart Corridor.
- Results will feed into development of Phase 3 preliminary design plans



Source: FHWA



# Project Schedule – Overall

## Phase 1 (CNS 300)

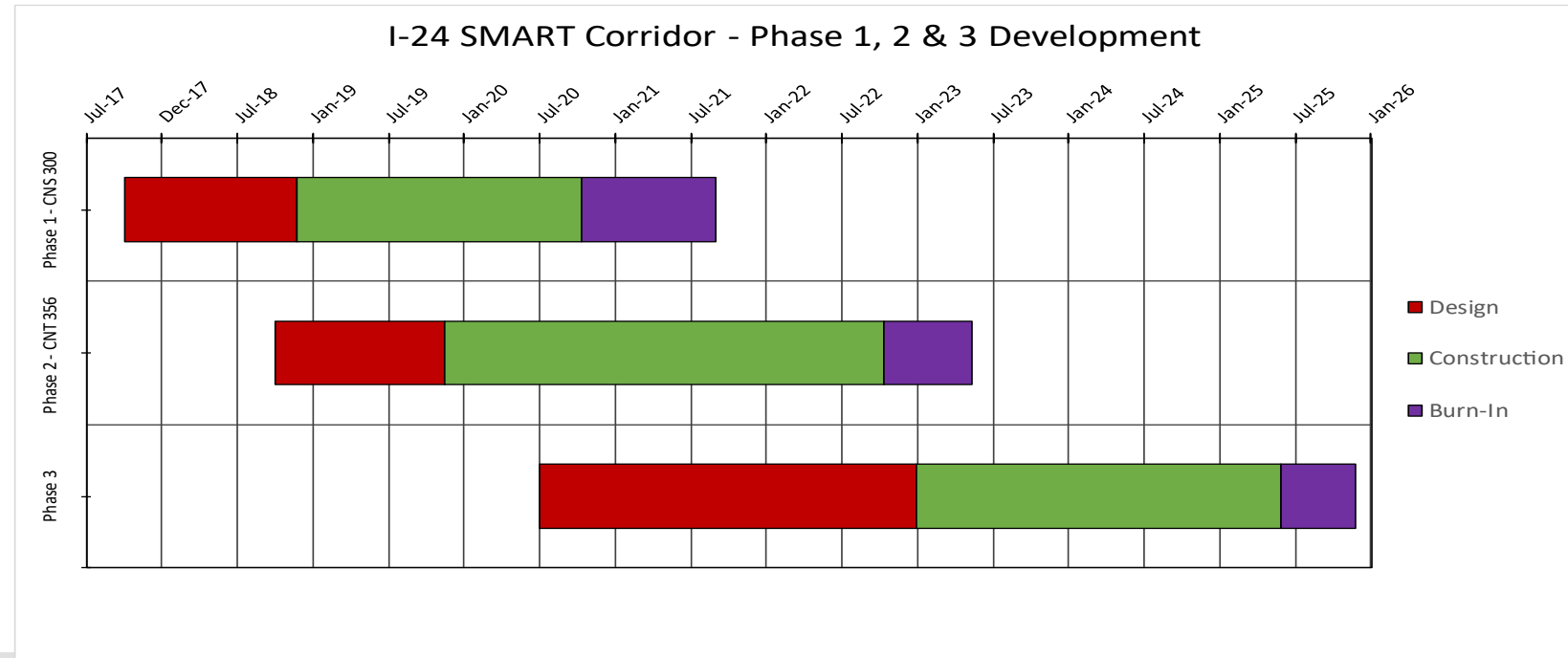
- Contract was awarded October 2018
- The project final acceptance December 2021

## Phase 2 (CNT 356)

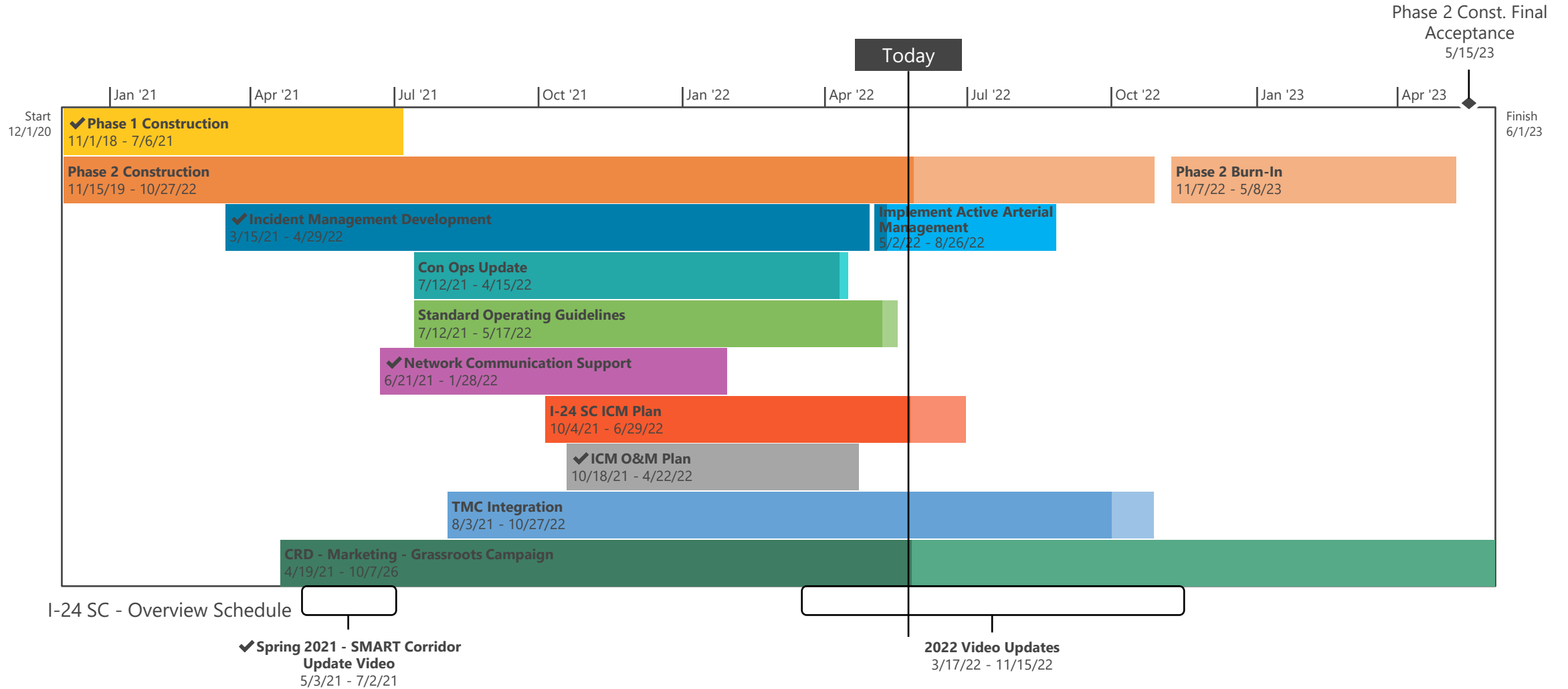
- Contract was awarded October 2019
- The project is scheduled for final acceptance Spring 2023

## Phase 3

- Earliest projected Letting Summer of 2023

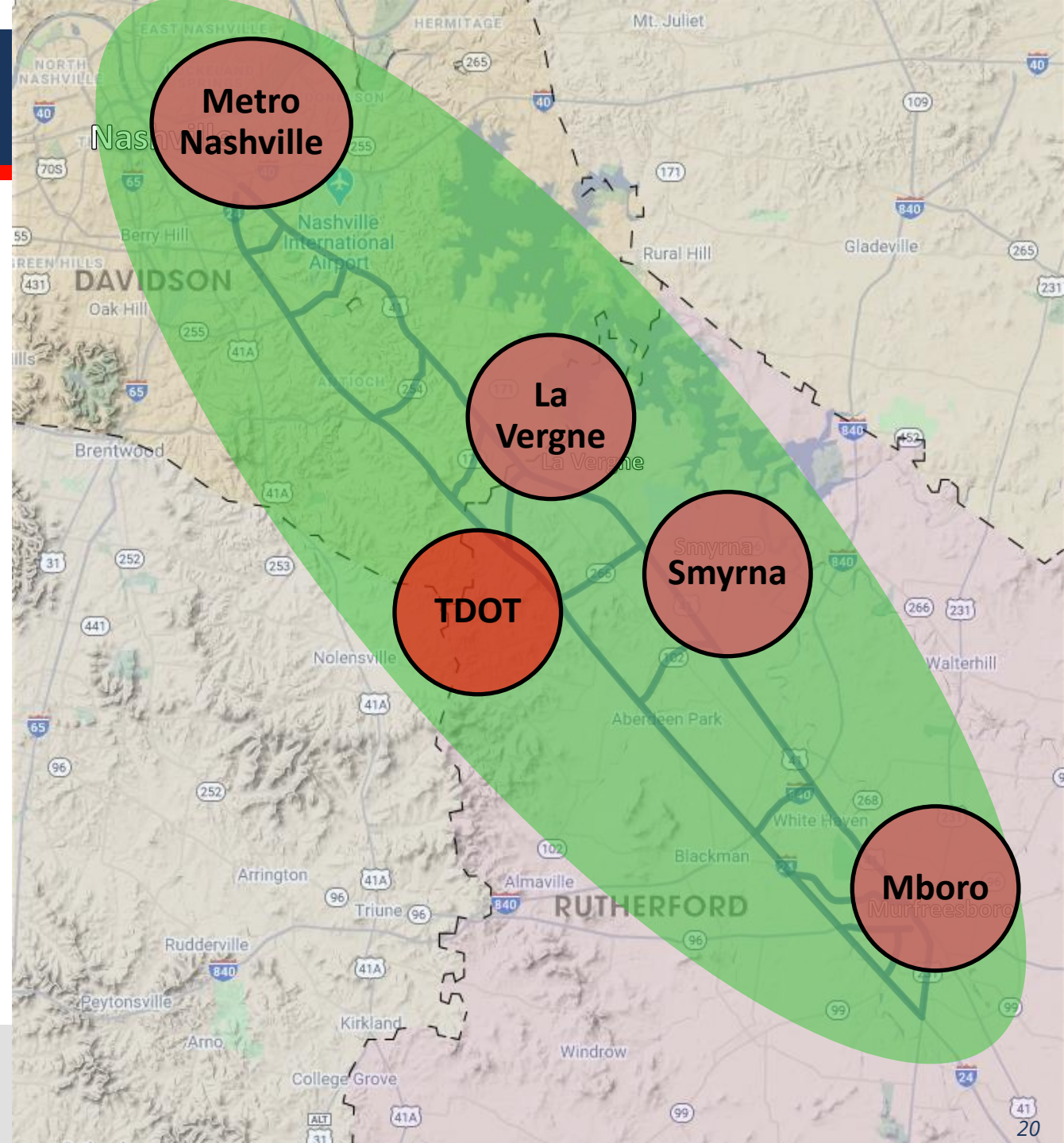


# I-24 Smart Corridor – Operations & Maintenance Program Schedule



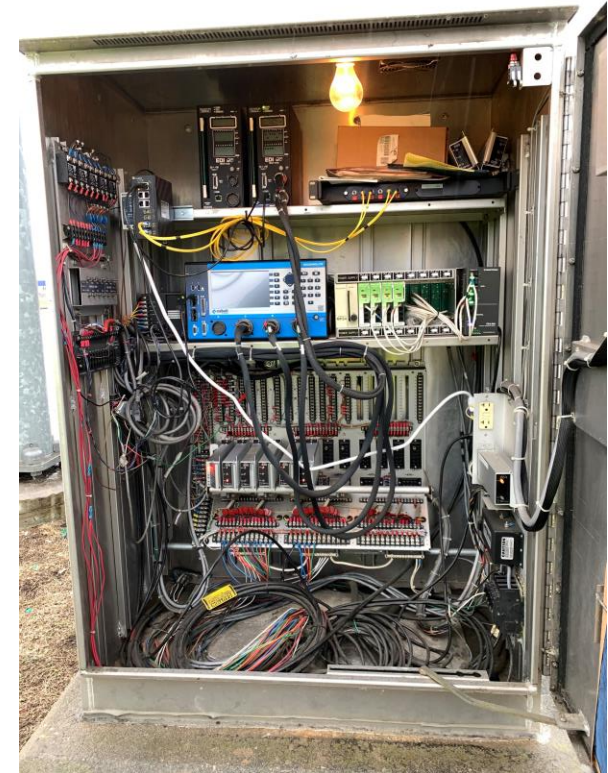
# Initial ICM Operations Needs

- Local Agency Operations Support
  - Assists and trains Local Agencies on Active Arterial Management.
  - Assists local agencies in planning and execution of ICM strategies.
  - Assists and trains staff in maintenance of ICM components within their jurisdictions.
  - Provide supplemental TOC support – during business hours; on call after hours
  - **Monitor, Coordinate, Control**
  - **“If you let us in, we will help”**



# I-24 Smart Corridor - Initial ICM Maintenance Needs

- ICM Maintenance Expectations
  - Set maintenance goals and expectations for the local agencies
    - Identify critical field assets
    - Define KPIs such as percent uptime
    - Establish expected repair times
  - TDOT's role if local agency cannot repair critical asset within accepted duration
    - TDOT maintain new technology; local agencies maintain traditional traffic signal elements
  - Paradigm Shift for Traffic Signal O&M in TN
    - TSM&M



# Operations and Maintenance Support and Training for Local Agencies

- Provide Agency Specific Training:
  - Bluetooth Devices
  - Connected Vehicle Technologies
  - Traffic Responsive Signal Operation
  - Improved Signalized Intersection Vehicle Detection Technologies
  - Centrac (Signal Controller central management software)
  - RITIS Training
- **Four local agencies**
  - **Varying capabilities**



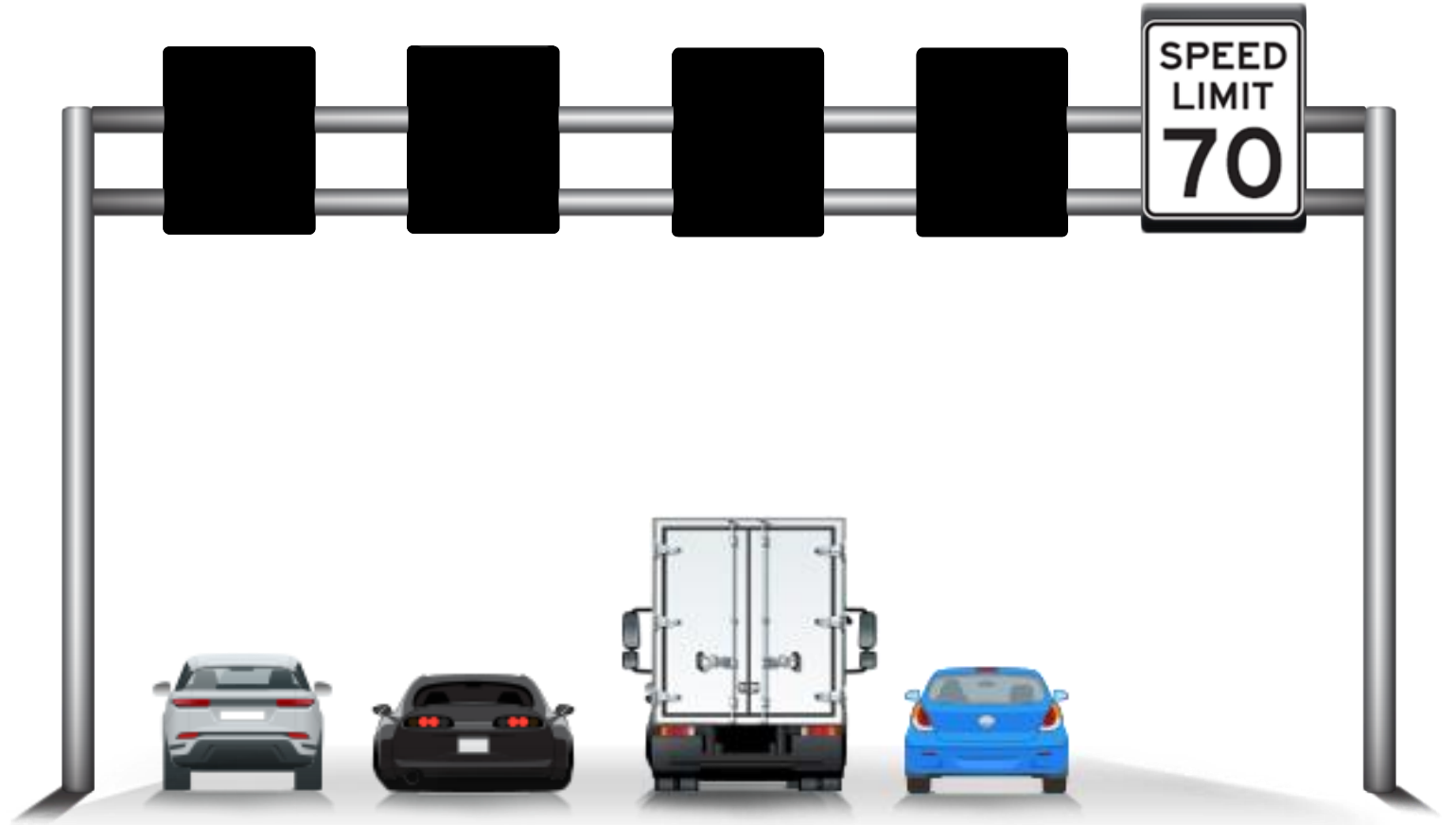
# Initial ICM Operation and Maintenance Needs

- ICM Coordinator Role
  - Defines and coordinate training needs
  - Manage a team to actively monitor the corridor
  - Monitor and manage LCS and VSL from TMC
  - Support the TMC on active freeway and arterial management strategies
  - Coordinate with Local Agencies
    - implement active arterial management for daily traffic
    - Implement incident management signal timing plans for diversions to/from I-24
    - Work shoulder to shoulder with Local Agencies
  - Provide corridor specific Traffic Incident Management support



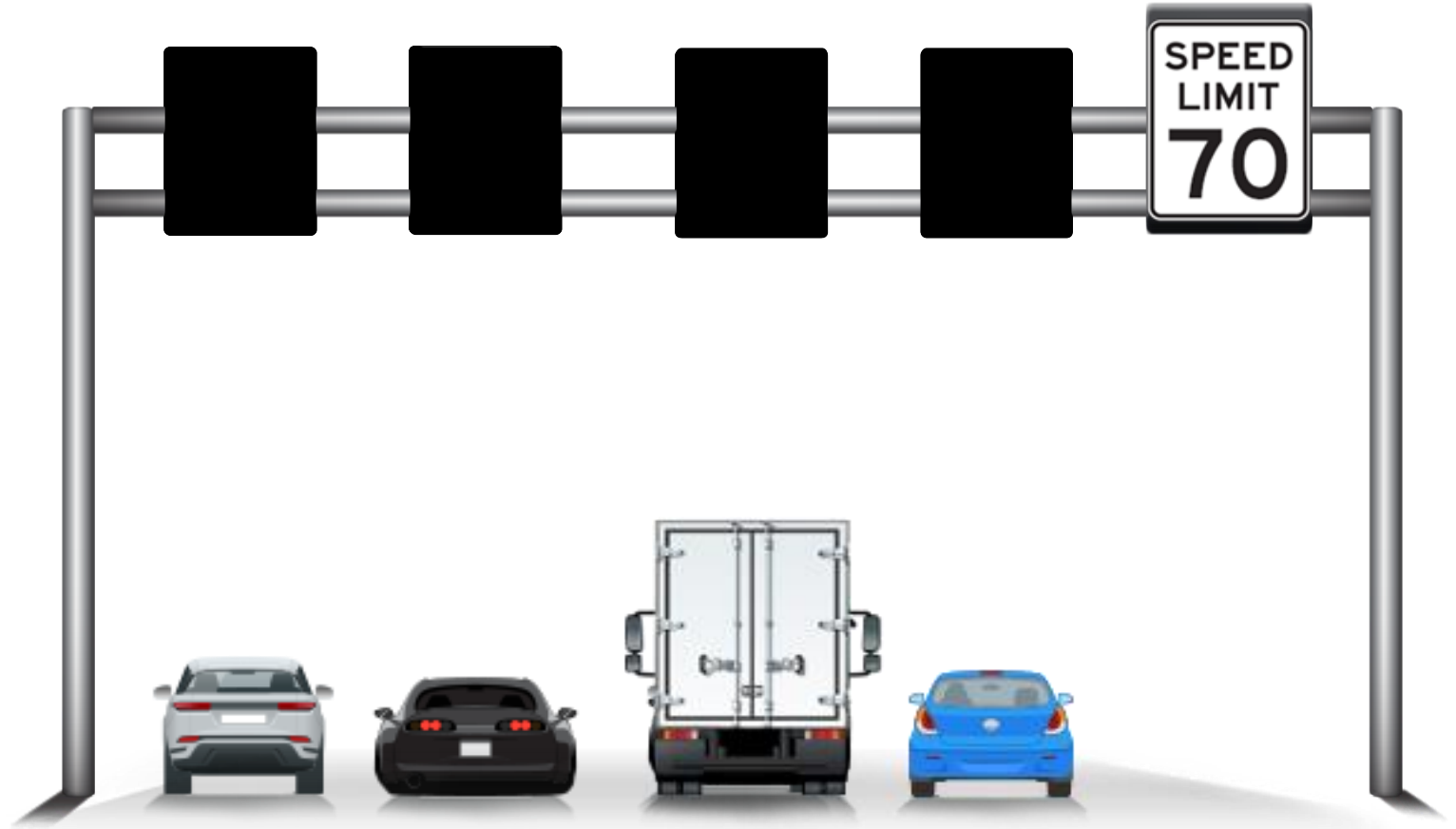
# Lane Control System with Variable Speed Limits

- The Lane Control System will provide lane by lane indications for upcoming roadway impacts.
- The system also includes Variable Speed Limits which will automatically detect decreased traffic speeds and display them.
- The intent is to warn drivers about slow traffic ahead and which lanes are blocked to help navigate through the incident.



# Public Outreach for Project

- Providing relevant and timely information to the public is critical to this project's success
  - Media campaigns in advance of project milestones:
  - Grassroots education
  - Fall 2022\* LCS / VSL Activation:
    - Video – “What drivers will see”
    - Video – “How it impacts you”
    - Video – “How it works”
  - Update of the project website as well as SmartWay 511.



# Public Outreach for Project

## I-24 SMART CORRIDOR

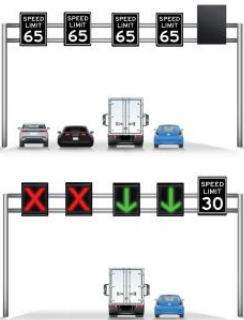
Phase 2 has begun! A lot of work is being done behind the scenes and the public will begin to see work on the road beginning in April.

### GOAL: Travel Time Reliability and Safety

The average commute time may not be drastically reduced, but these improvements are expected to make the average commute time more consistent.



### PHASE 2



LANE CONTROL SIGN GANTRIES

#### CONSTRUCTION LANE CLOSURES:

**Gantry Construction:**  
**April - June**  
From MM 53 - 70  
(Nashville to Murfreesboro)  
Beginning April 3  
8 p.m. - 5 a.m.  
2 weeks on and 1 week off

**Installation of  
Communication Devices:**  
**July - Sept.**  
Network communication  
testing will have minimal  
traffic impacts (TBD)



#### OVERHEAD GANTRIES

A total of 67 lane control sign gantries will be placed over east and westbound lanes. They will be constructed in the overnight hours beginning April. The signs will be dark until October.

#### ITS UPGRADES

Several Intelligent Transportation Systems (ITS) improvements will be implemented to help effectively manage the corridor.

#### ACTIVE TRAFFIC MANAGEMENT

Improvements made to the transportation system to actively manage traffic across multiple jurisdictions to enhance travel time reliability and safety.

#### I-24 Smart Corridor

##### Phase 2 Media Event



- **Traffic Volumes:**
  - 177,000 (2021 AADT) between Thompson Station and Harding Place
  - 121,000 (2021 AADT) between I-840 and SR 102

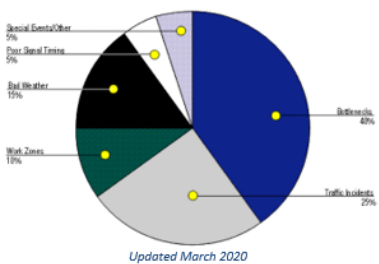
#### Infrastructure Improvements

| Device Type                       | Phase 1 | Phase 2 | Total |
|-----------------------------------|---------|---------|-------|
| Traffic Signal Controllers        | 122     | -       | 122   |
| Traffic Signal Detection Upgrades | -       | 122     | 122   |
| DSRC/Bluetooth Sensors            | 140     | 0       | 140   |
| Roadside DMS                      | 19      | 10      | 29    |
| Ramp Extensions                   | 4       | -       | 4     |
| Emergency Pull Offs               | 14      | -       | 14    |
| CCTV                              | -       | 45      | 45    |
| Radar Sensors                     | -       | 60      | 60    |
| LCS/VSL Gantries                  | -       | 67      | 67    |

- NOTE: 67 Lane Control Sign (LCS)/Variable Speed Limit (VSL) Gantries (33 EB, 34 WB)

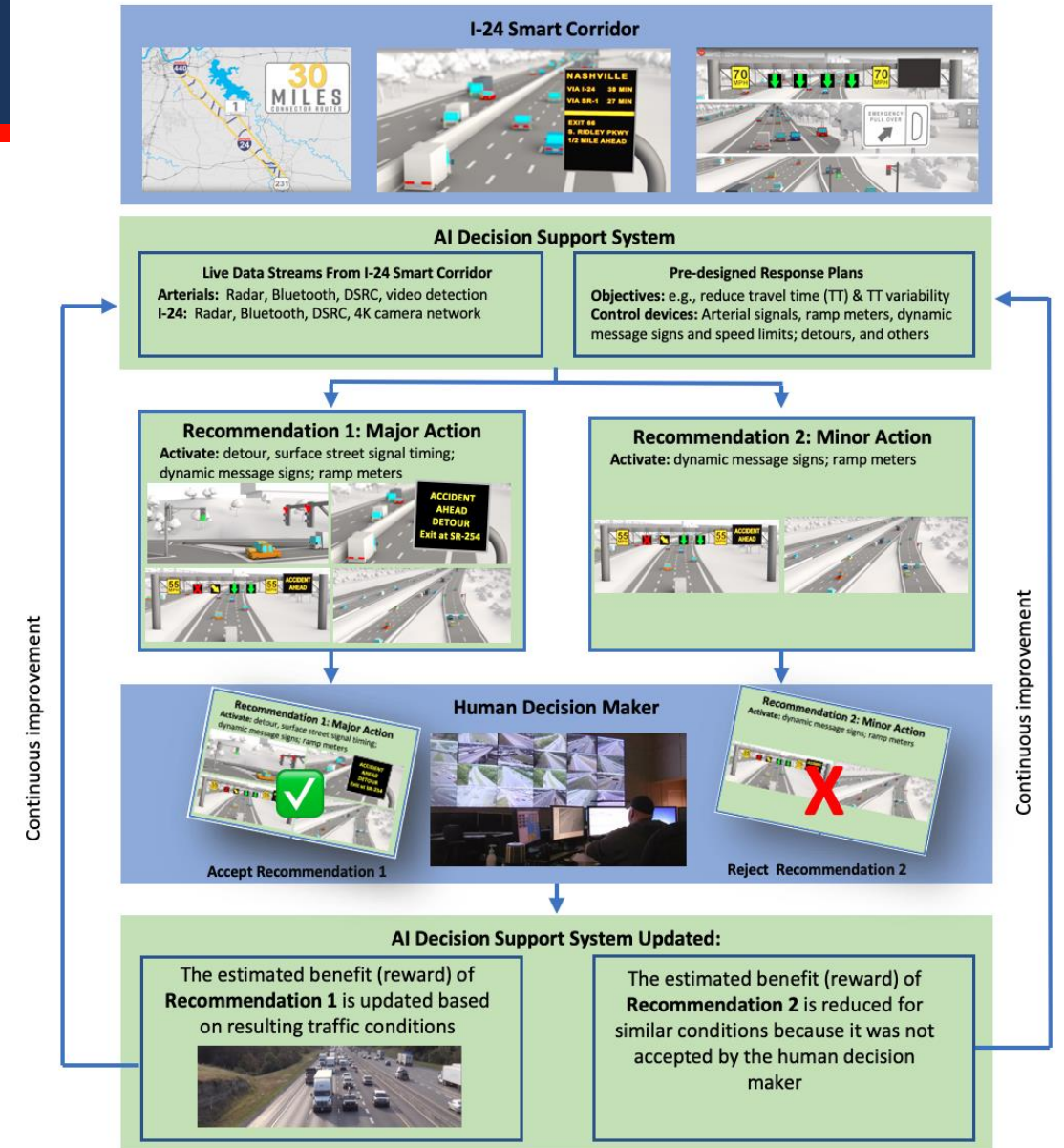
- **Project Cost:** Phase 1 = \$18M; Phase 2: \$45M
- **Schedule:** Phase 1: completion = December 2021; Phase 2: completion = May 2023
- **Public Outreach:**
  - 5 local presentations since Fall of 2021 - City of Murfreesboro, City of Smyrna, Brentwood Rotary Club, City of LaVergne, Rutherford County Chamber of Commerce
  - Upcoming presentations: ITS TN in April, FHWA TN Division in May, in discussions with community groups along the Corridor
- **TSMO Factoids:**
  - The likelihood of a secondary crash increases by **2.8%** for each minute the primary incident continues to be a hazard
  - Every minute of blockage on a freeway travel lane increases delay after the incident is cleared by a **factor of four**
  - Traffic incidents and Work Zones account for approximately 35% of all congestion
  - Poor Signal Timing and Special Events account for approximately 10% of all congestion

Figure ES.2 The Sources of Congestion  
National Summary



# ATCMTD Grant Project ICM DSS

- Artificial Intelligence-powered decision support tools for Integrated Corridor Management
- Tools include:
  - Artificial Intelligence-based ICM Decision Support System
  - Web interface for ICM partners
  - Traffic Management Center ICM software integration



# Challenges for Initial ICM Deployment in Tennessee

- Multiple TSMO / ICM Strategies deployed for the first time in Tennessee
  - Motorist Education
- Construction Challenges
  - IT Network – first time for C2C
  - Supply Chain
- Operational Challenges
  - TDOT's Role in arterial management
  - Local Agency Role to support ICM
  - Maintenance requirements
  - Holistic corridor management
    - Shoulder to shoulder with locals
- MOE to show ROI
- Dedicated funding
  - From Pilot to sustainable program

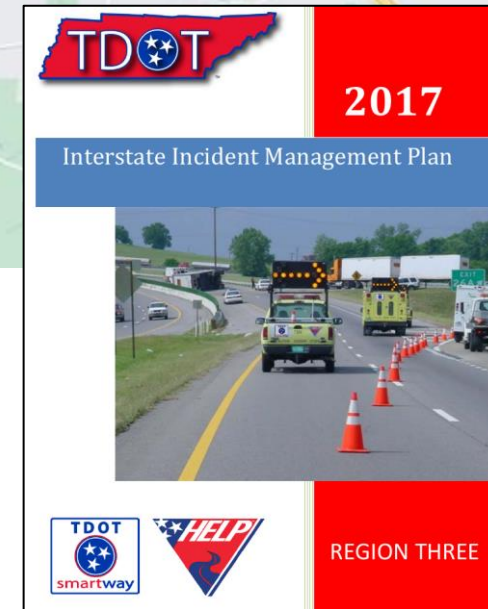
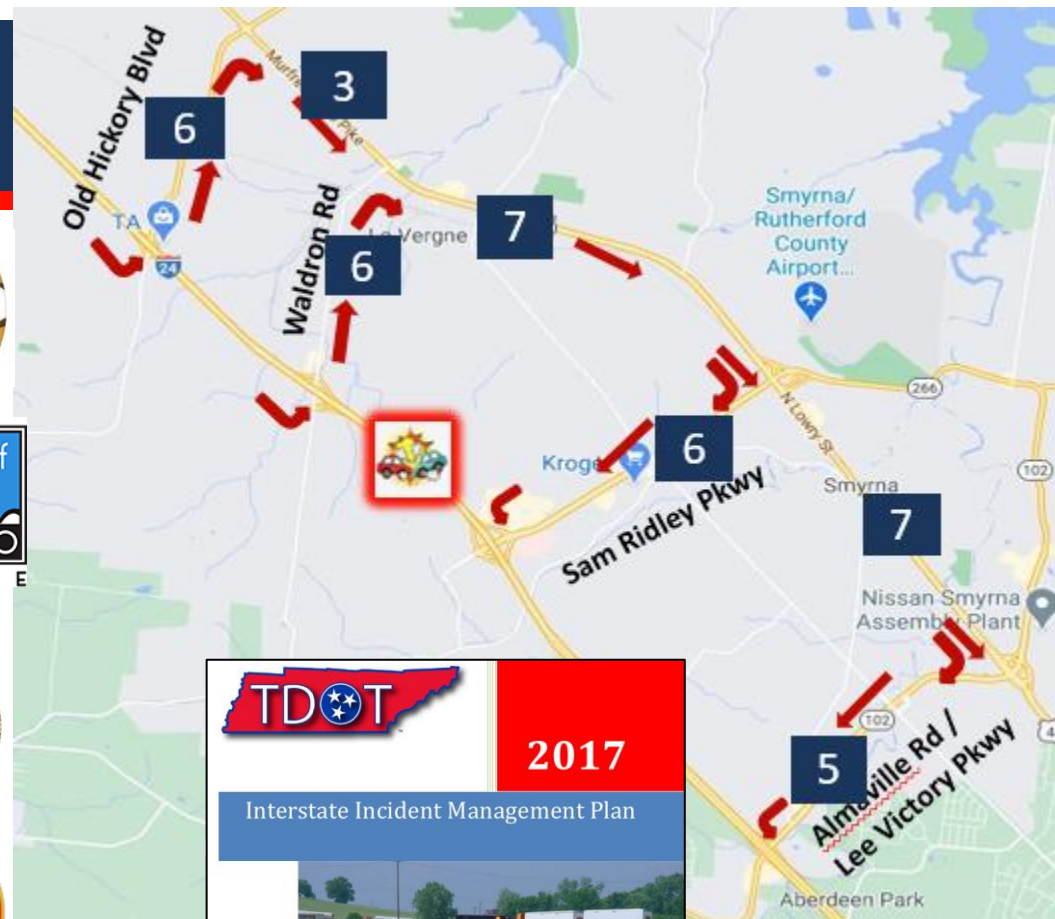


# Next Steps

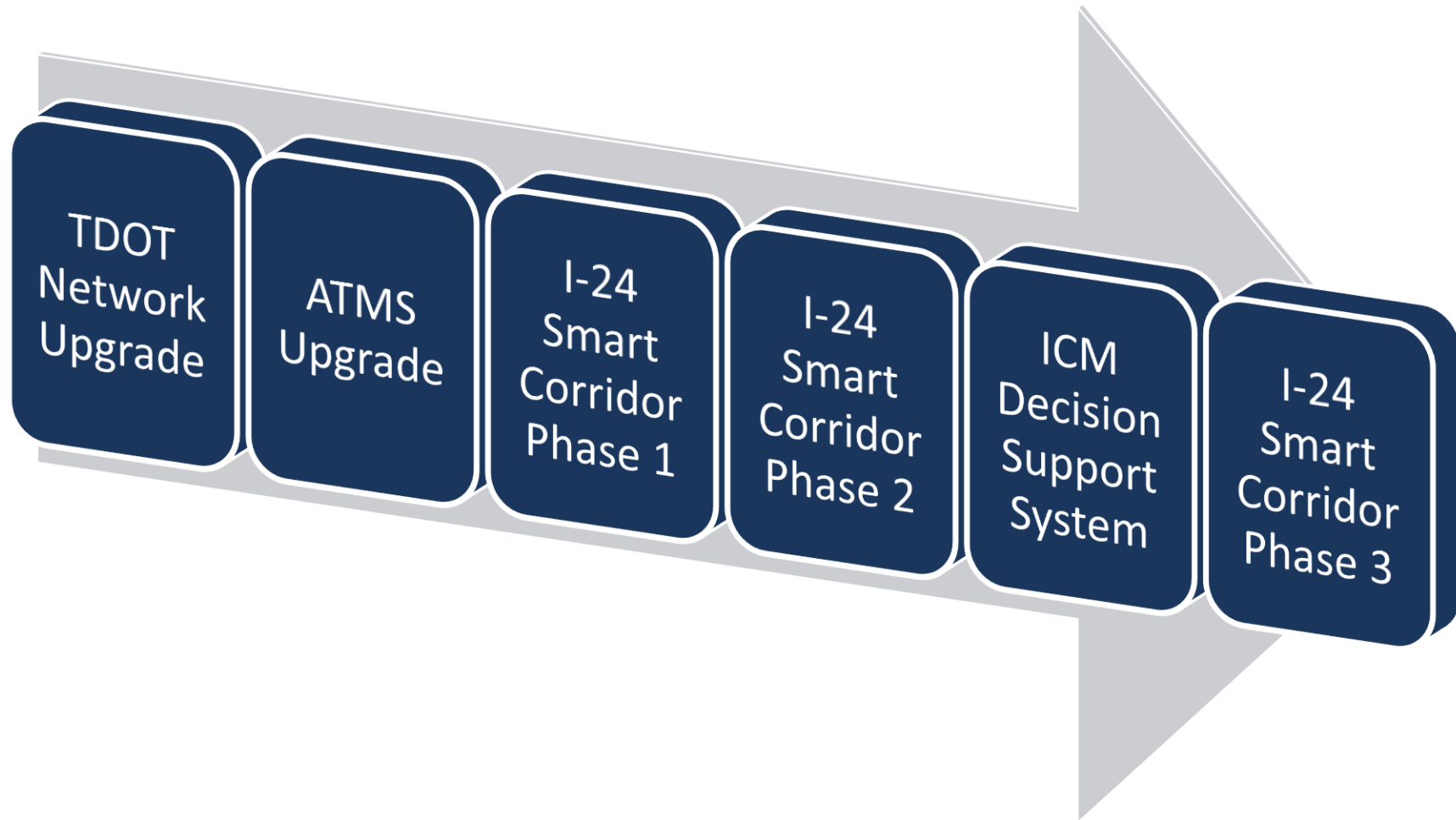
- Incident Management Signal Timing Plans
  - Centrac Database programming and field fine-tuning
- LCS and VSL Operations
  - Demo of test system; troubleshooting; training
- Continue Interagency Coordination
  - Monthly TAC meeting with the Local Agencies and First Responders
  - Review and approve ICM O&M Plan and SOGs
- I-24 Smart Corridor Phase 3 Design
  - Preliminary Plans Submittal & Stakeholder Review
- Implement lessons learned from Peer States



**NDOT**

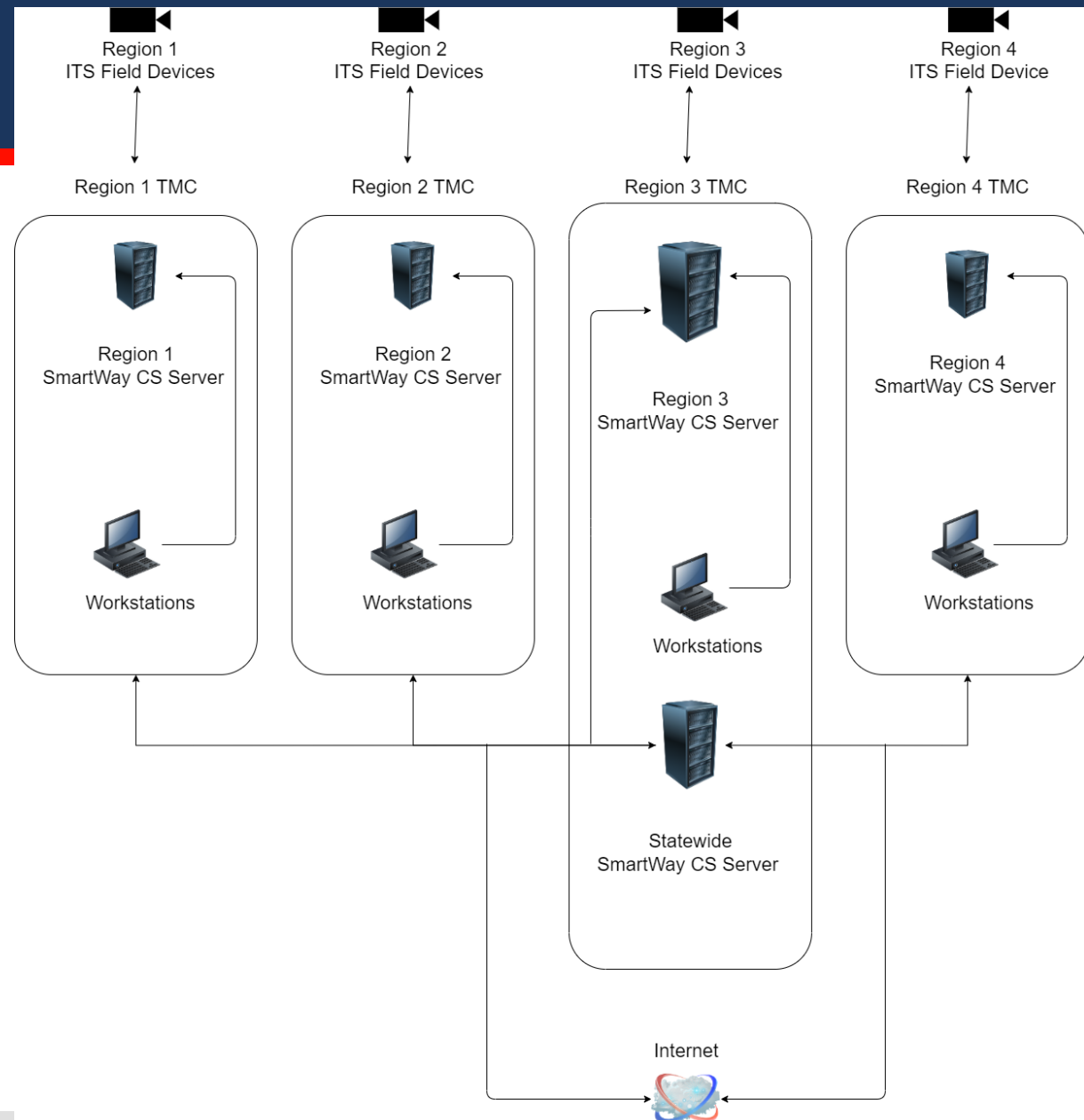


# TDOT's Journey to Integrated Corridor Management



# TDOT Network Upgrade

- Cisco Networking Equipment
- Replacement of all Layer 2 and Layer 3 Switches
- Addition of 829 Routers
- Updated security and IP-Scheming



# Why was SWCS needed?

- Efficient incident/HELP Truck management
- Recurring congestion management
- Establish a unified software platform
- Integrated Corridor Management (ICM) support
- Data exchange between different TMCs/TOCs

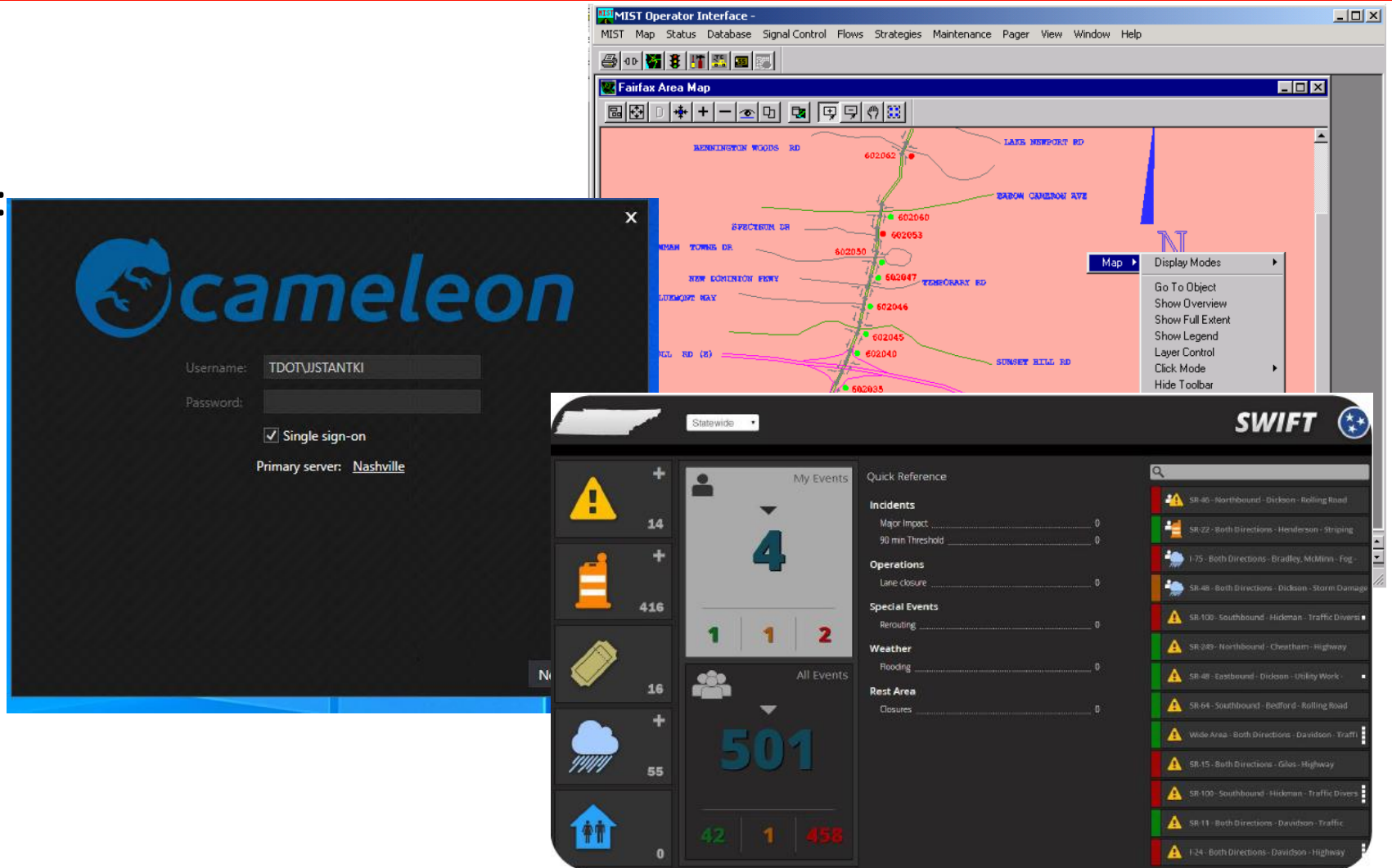


Tennessee roads experience **410** vehicle crashes everyday on average!

# Where did we start?

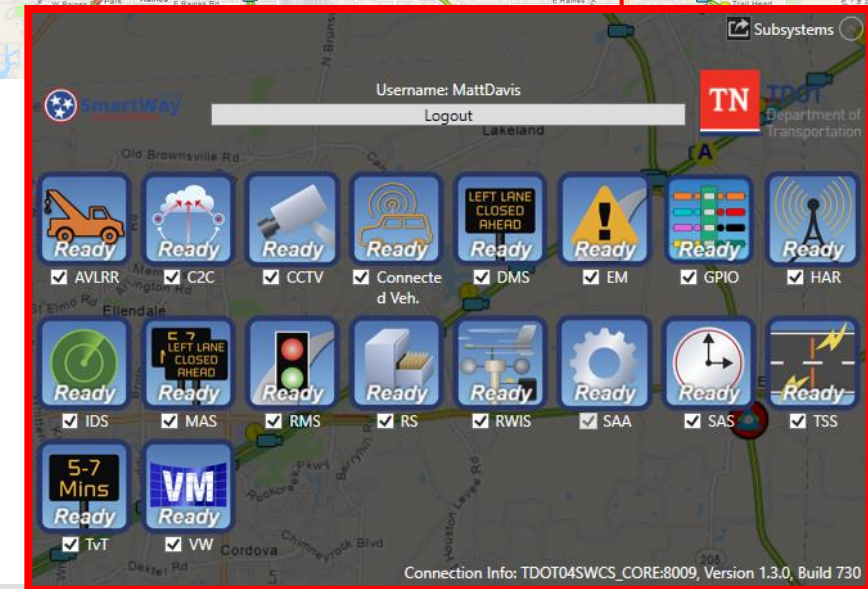
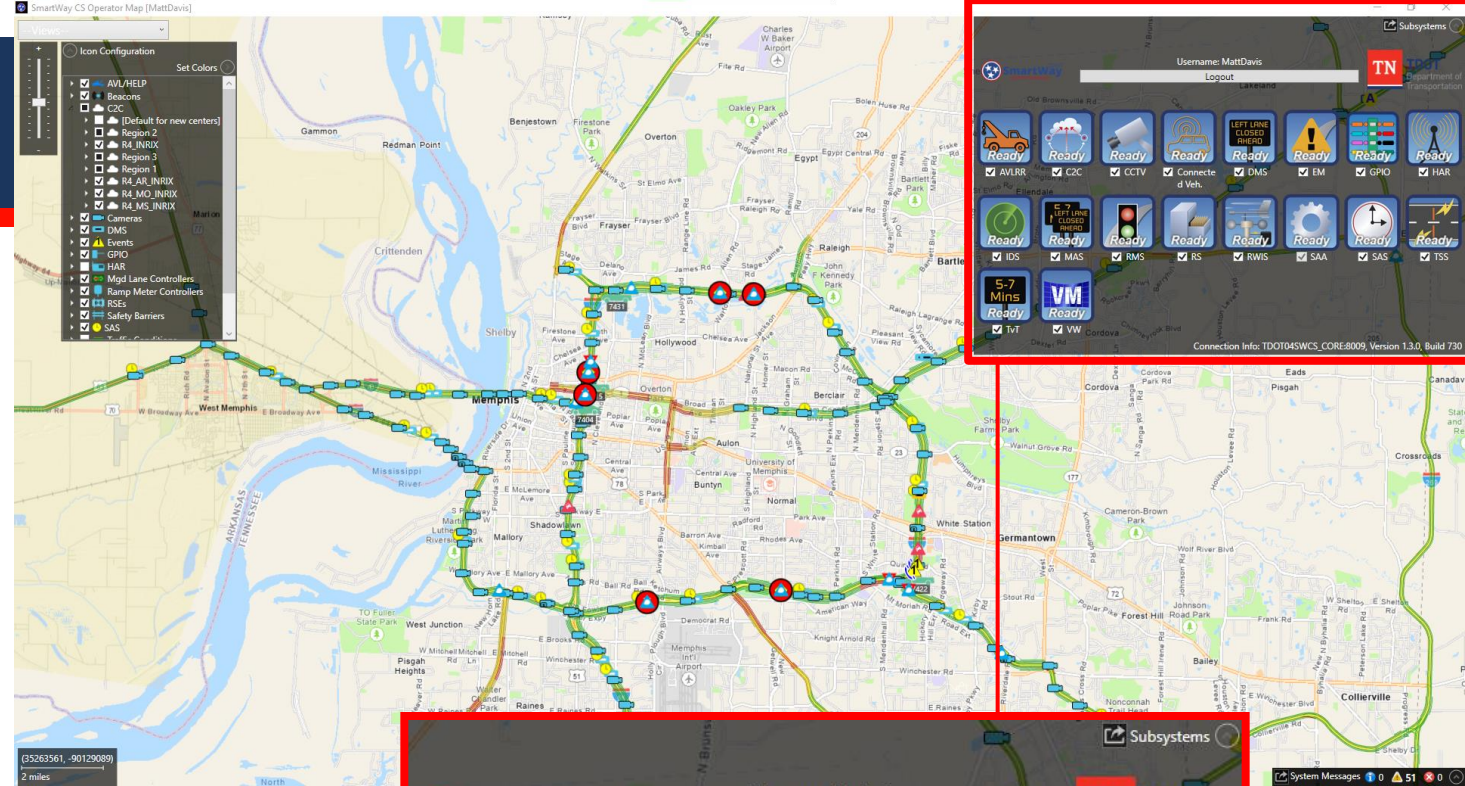
Multiple software for Incident Management:

- MIST
- IM/LOCATE
- Cameleon
- SWIFT
- Vero
- Platinum



# Where are we now?

- All modules in one package
- Unified map interface
- Statewide consistency
- Single databus to facilitate automation
- Center to Center Communications



# SWCS Capabilities

**Event/Incident  
Management**

**Help Trucks  
Management**

**Traffic  
Congestion  
Management**

**Device  
Management**

**Reporting**

# Event/Incident Management

- Incident Location
- Lane Maps
- Event Type
- Involved Vehicles
- HELP Dispatch



Event Details - 15693

Save Event Cancel Clone Event Details

Open Response Plan Save and Suggest Response Plan Terminate Response Plan Find on Map Nearest CCTV Location Generate Chronology Report Reporting

Expand All Collapse All

Event Type: Overturned Vehicle HAZMAT Fire Rollover Crime Scene

Vehicle Dispatch: 7404, 7415, 7431

Involved Vehicles: Red Tractor Trailer TAG# U989935

Event Details Comments Event History 90 Minute Report

Administrative Details Impact on Roadways Reporting & Dispatch

Organization: Region 4 TMC

Notifying Agency: TMC Operator

Notifying Contact: Richard Frederick

Vehicle Dispatch: 7404, 7415, 7431

Location/Congestion: SHELBY on Interstate 40 Westbound, Before MILE MARKER 18.2 No congestion

Location

County: SHELBY

Roadway: Interstate 40

Direction: Westbound

Reference Point: 18.2 MILE MARKER

Offset: before MILE MARKER 18.2

Type: Urban

Distance: 0 feet

Mile Marker: 1

Alternate Routes: N/A

Has Congestion: ☐

Lane Blockage: Left Lane (of 2 Lanes) Blocked, Left Shoulder Blocked

Sh M M Sh M M Sh

Anticipated Clearance Time: minutes

TN-ATIS Severity: Major

Core Responders

| Agency                    | Notified By TMC?                    | Notified    |
|---------------------------|-------------------------------------|-------------|
| HELP Operator             | <input checked="" type="checkbox"/> | 04/30 04:45 |
| Memphis Police Department | <input type="checkbox"/>            |             |
| Memphis EMS               | <input type="checkbox"/>            |             |
| TDOT Region 4 Queue Truck | <input type="checkbox"/>            |             |
| Towing                    | <input type="checkbox"/>            |             |
| Towing - Zone 1           | <input type="checkbox"/>            |             |
| Towing - Zone 2           | <input type="checkbox"/>            |             |
| Towing - Zone 3           | <input type="checkbox"/>            |             |

Other Responders

| Agency                                 | Notified By TMC?         | Notified |
|--|--------------------------|----------|
| Memphis Office of Emergency Management | <input type="checkbox"/> |          |
| Other Police Agencies                  | <input type="checkbox"/> |          |
| Other EMS                              | <input type="checkbox"/> |          |
| Other Fire                             | <input type="checkbox"/> |          |
| Other HELP                             | <input type="checkbox"/> |          |
| THP Local                              | <input type="checkbox"/> |          |
| TDOT Region 4 Maintenance              | <input type="checkbox"/> |          |
| Towing - Zone 4                        | <input type="checkbox"/> |          |
| Towing - Zone 5                        | <input type="checkbox"/> |          |
| Towing - Zone 6                        | <input type="checkbox"/> |          |
| Roadside Service                       | <input type="checkbox"/> |          |
| Tennessee Emergency Management Agency  | <input type="checkbox"/> |          |

Event ID Beat Driver Radio Telephone

|       |  |                              |      |           |
|-------|--|------------------------------|------|-----------|
|       |  | Supervisor Adam Smith        | 7401 | 901-483-1 |
|       |  | Supervisor Sean Boyette      | 7402 | 901-229-4 |
|       |  | Supervisor Marshall Shumaker | 7403 | 901-305-4 |
| 15693 |  | Supervisor Eric Hill         | 7404 | 901-483-1 |
|       |  | Supervisor Sean Boyette      | 7405 |           |
|       |  | Rover Marvin Hurley          | 7412 | 901-355-4 |
|       |  | Route 1                      | 7413 | 901-440-1 |
| 15693 |  | Route 3                      | 7414 | 901-395-2 |
|       |  | Route 2                      | 7415 | 901-483-1 |
|       |  | Route 1                      | 7416 |           |
|       |  | Route 1                      | 7417 | 901-483-1 |
|       |  | Route 1                      | 7418 | 901-483-1 |
|       |  | Route 3                      | 7419 | 901-483-1 |
|       |  | Route 3                      | 7420 | 901-275-4 |
|       |  | Route 1                      | 7421 | 901-500-1 |

There are currently no errors.

status messages reported.

Notified On Scene Departed

No status messages reported.

Event Details - 15693

Save Event Cancel Clone Event Details

Open Response Plan Save and Suggest Response Plan Terminate Response Plan Find on Map Nearest CCTV Location Generate Chronology Report Reporting

Expand All Collapse All

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| Towing - Zone 1           | <input type="checkbox"/>            |             |
| Towing - Zone 2           | <input type="checkbox"/>            |             |
| Towing - Zone 3           | <input type="checkbox"/>            |             |

Other Responders

| Agency                                 | Notified By TMC?         | Notified |
|--|--------------------------|----------|
| Memphis Office of Emergency Management | <input type="checkbox"/> |          |
| Other Police Agencies                  | <input type="checkbox"/> |          |
| Other EMS                              | <input type="checkbox"/> |          |
| Other Fire                             | <input type="checkbox"/> |          |
| Other HELP                             | <input type="checkbox"/> |          |
| THP Local                              | <input type="checkbox"/> |          |
| TDOT Region 4 Maintenance              | <input type="checkbox"/> |          |
| Towing - Zone 4                        | <input type="checkbox"/> |          |
| Towing - Zone 5                        | <input type="checkbox"/> |          |
| Towing - Zone 6                        | <input type="checkbox"/> |          |
| Roadside Service                       | <input type="checkbox"/> |          |
| Tennessee Emergency Management Agency  | <input type="checkbox"/> |          |

Event ID Beat Driver Radio Telephone

|       |  |                              |      |           |
|-------|--|------------------------------|------|-----------|
|       |  | Supervisor Adam Smith        | 7401 | 901-483-1 |
|       |  | Supervisor Sean Boyette      | 7402 | 901-229-4 |
|       |  | Supervisor Marshall Shumaker | 7403 | 901-305-4 |
| 15693 |  | Supervisor Eric Hill         | 7404 | 901-483-1 |
|       |  | Supervisor Sean Boyette      | 7405 |           |
|       |  | Rover Marvin Hurley          | 7412 | 901-355-4 |
|       |  | Route 1                      | 7413 | 901-440-1 |
| 15693 |  | Route 3                      | 7414 | 901-395-2 |
|       |  | Route 2                      | 7415 | 901-483-1 |
|       |  | Route 1                      | 7416 |           |
|       |  | Route 1                      | 7417 | 901-483-1 |
|       |  | Route 1                      | 7418 | 901-483-1 |
|       |  | Route 3                      | 7419 | 901-483-1 |
|       |  | Route 3                      | 7420 | 901-275-4 |
|       |  | Route 1                      | 7421 | 901-500-1 |

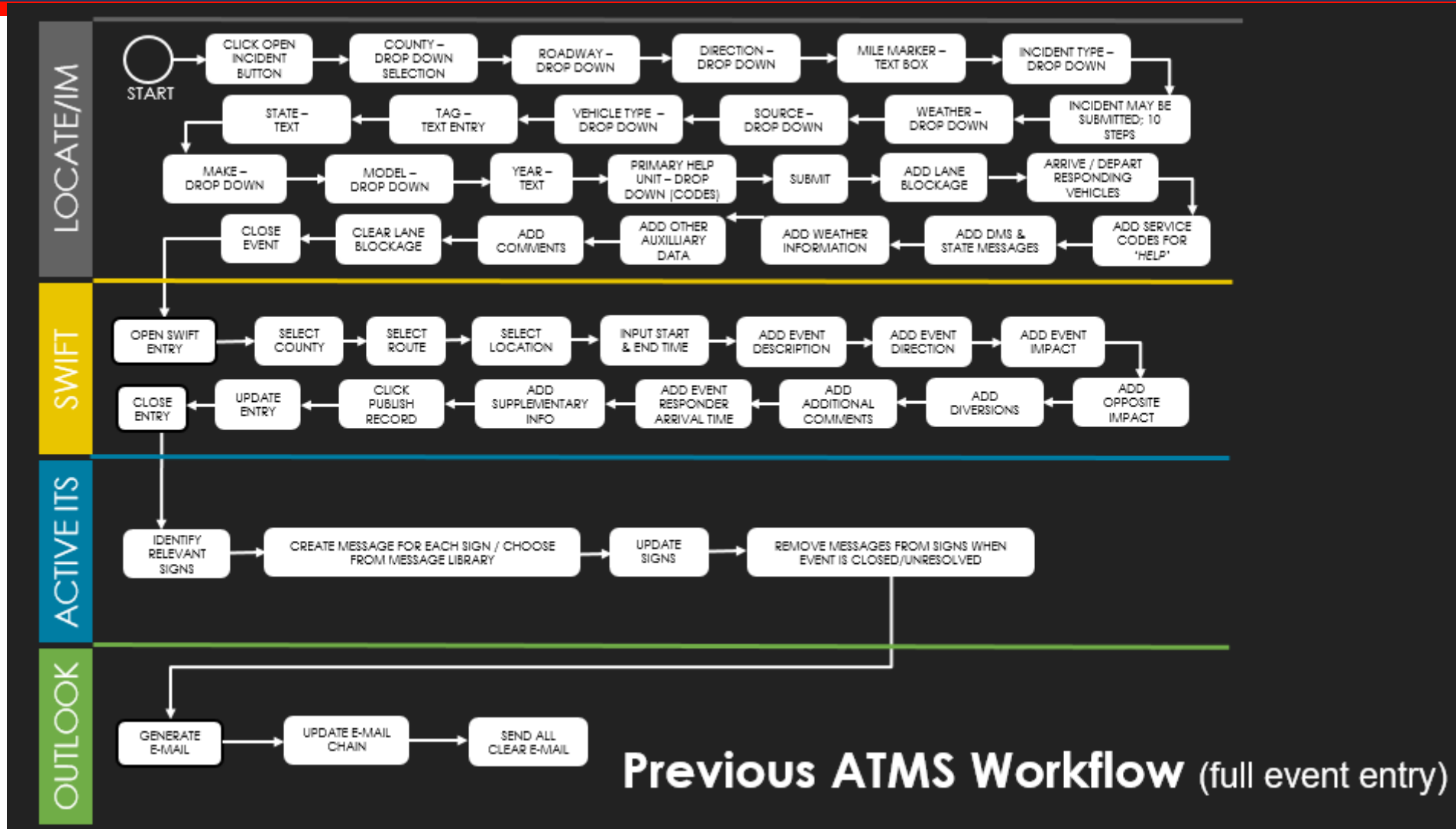
There are currently no errors.

status messages reported.

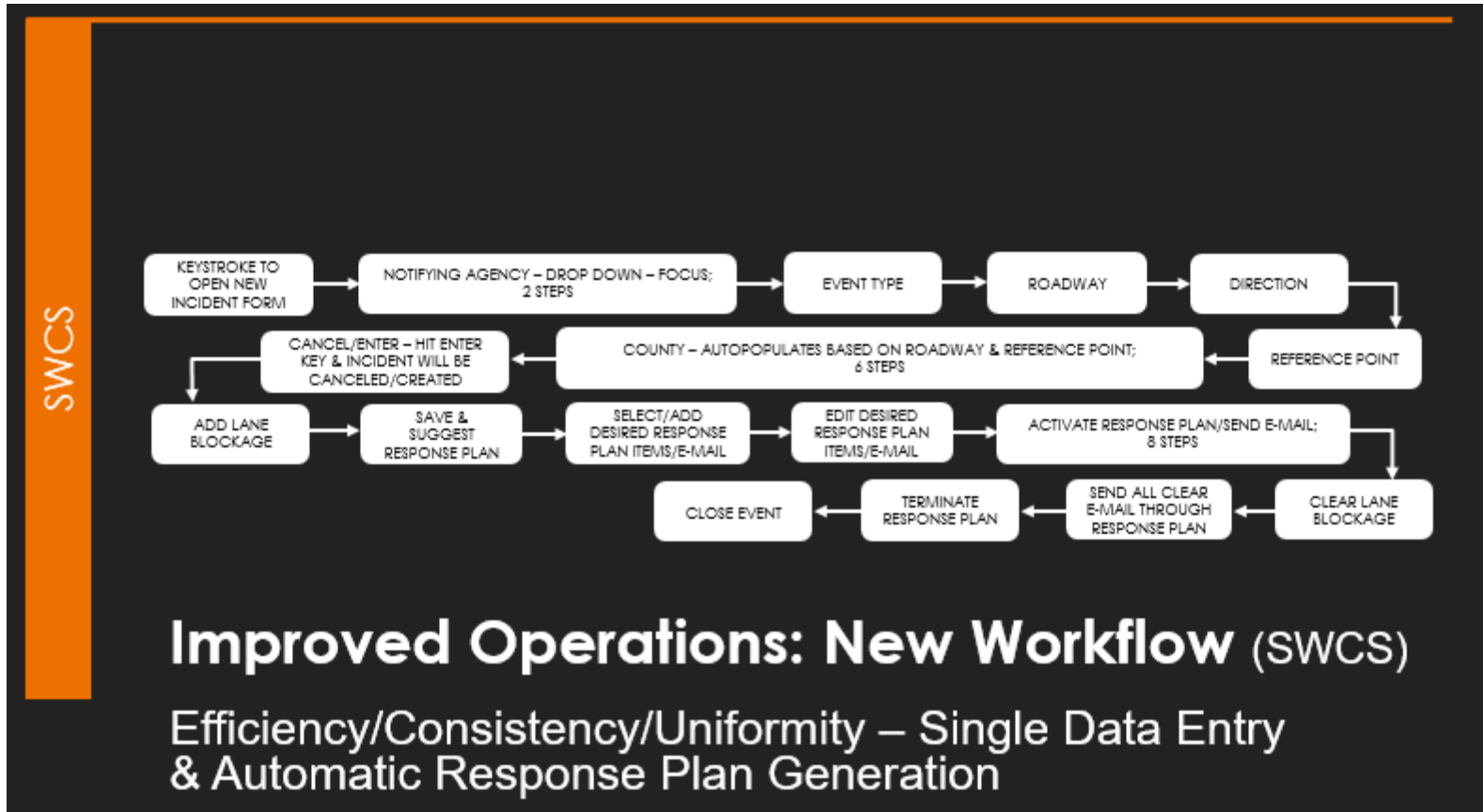
Notified On Scene Departed

No status messages reported.

# Event Workflow



# Event Workflow



# Response Plans

Response Plan: Event 15693

Activate Plan Terminate Plan Add Item Edit Item Remove Item Find Devices on Map Accept Load Predefined Get New Suggestion DMS Dist: 5 HAR Dist: 0 TIM Dist: 0

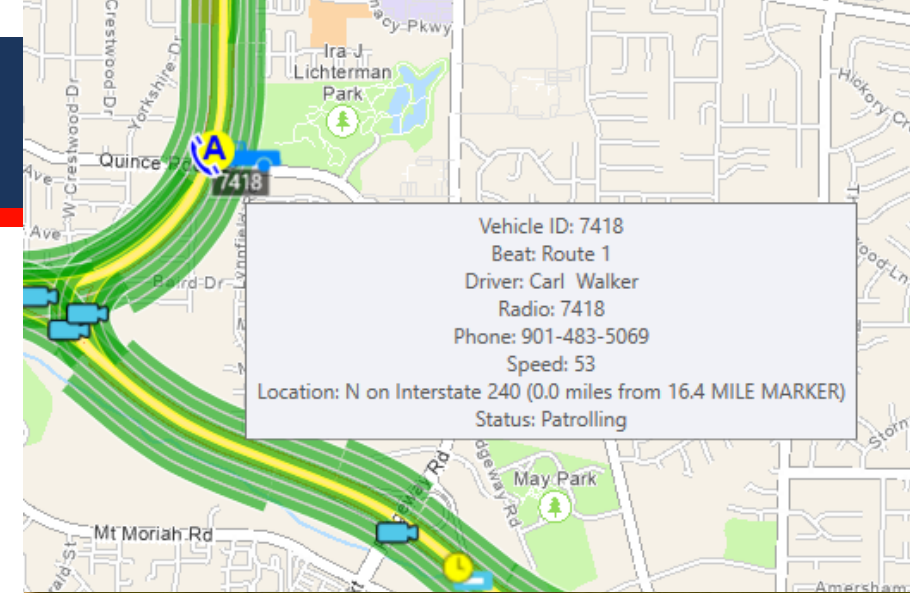
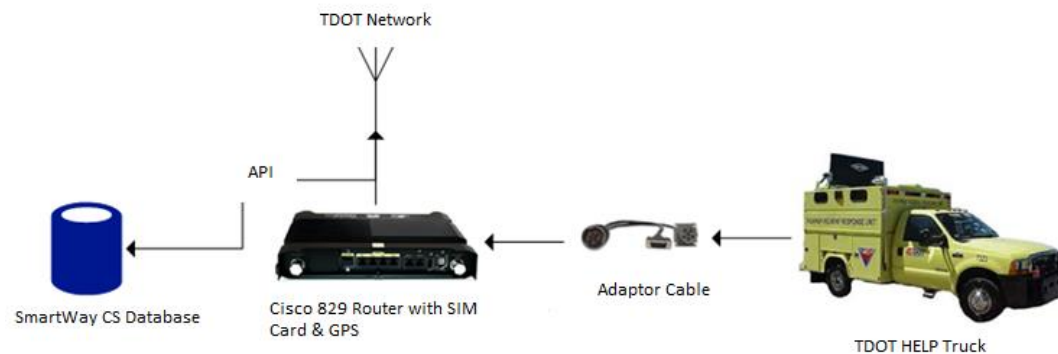
Current Plan Suggestions Event:15693Plan:Active

| Device Details  | Response Plan Message Details   | Currently Active Message Details   |
|---|---|--|
| <b>Email</b>  | <b>Email Groups:</b> TDOT Region 4 Notifications<br><b>Subject:</b> Active Level 2<br><b>Title:</b><br><b>Location:</b> SHELBY I0040 WB Before Exit 1D MM 1B.2<br><b>Body:</b><br>Location: SHELBY I0040 WB Before Exit 1D MM 1B.2<br><br>Incident: Overturned Vehicle<br><br>Impact: Left Lane (of 2 Lanes) Blocked, Left Shoulder Blocked<br><br>Expected Duration: 0 minutes<br><br>TDOT Incident Commander on Scene: TMC Operator<br><br>Notes: Traffic is being allowed to pass in lane two and on the right shoulder. |  |
| <b>511 ATIS</b>   | Incident in SHELBY county, going Westbound on Interstate 40 before MILE MARKER 1B.2 with Left lane blocked Last updated 4/30/2021 8:49:12 AM  |  |
| <b>DMS</b><br>R4E-01240-012.9E (39)<br>[Region 4]<br>Active     | <b>LEFT LANE BLOCKED</b><br>40 W BEFORE EXIT 1<br>12 MI AHEAD<br>Until Canceled Displayed 14  | <b>LEFT LANE BLOCKED</b><br>40 W BEFORE EXIT 1<br>12 MI AHEAD<br>Until Canceled <a href="#">15693</a> 14 |
| <b>DMS</b><br>R4E-SamCooper-001.0E (19)<br>[Region 4]<br>Active | <b>LEFT LANE BLOCKED</b><br>40 W BEFORE EXIT 1<br>14 MI AHEAD<br>Until Canceled Displayed 16  | <b>LEFT LANE BLOCKED</b><br>40 W BEFORE EXIT 1<br>14 MI AHEAD<br>Until Canceled <a href="#">15693</a> 16 |
| <b>DMS</b><br>R4E-01240-014.4E (37)<br>[Region 4]<br>Active     | <b>LEFT LANE BLOCKED</b><br>40 W BEFORE EXIT 1<br>14 MI AHEAD<br>Until Canceled Displayed 16  | <b>LEFT LANE BLOCKED</b><br>40 W BEFORE EXIT 1<br>14 MI AHEAD<br>Until Canceled <a href="#">15693</a> 16 |

0 1 0 Suggested response plan received.

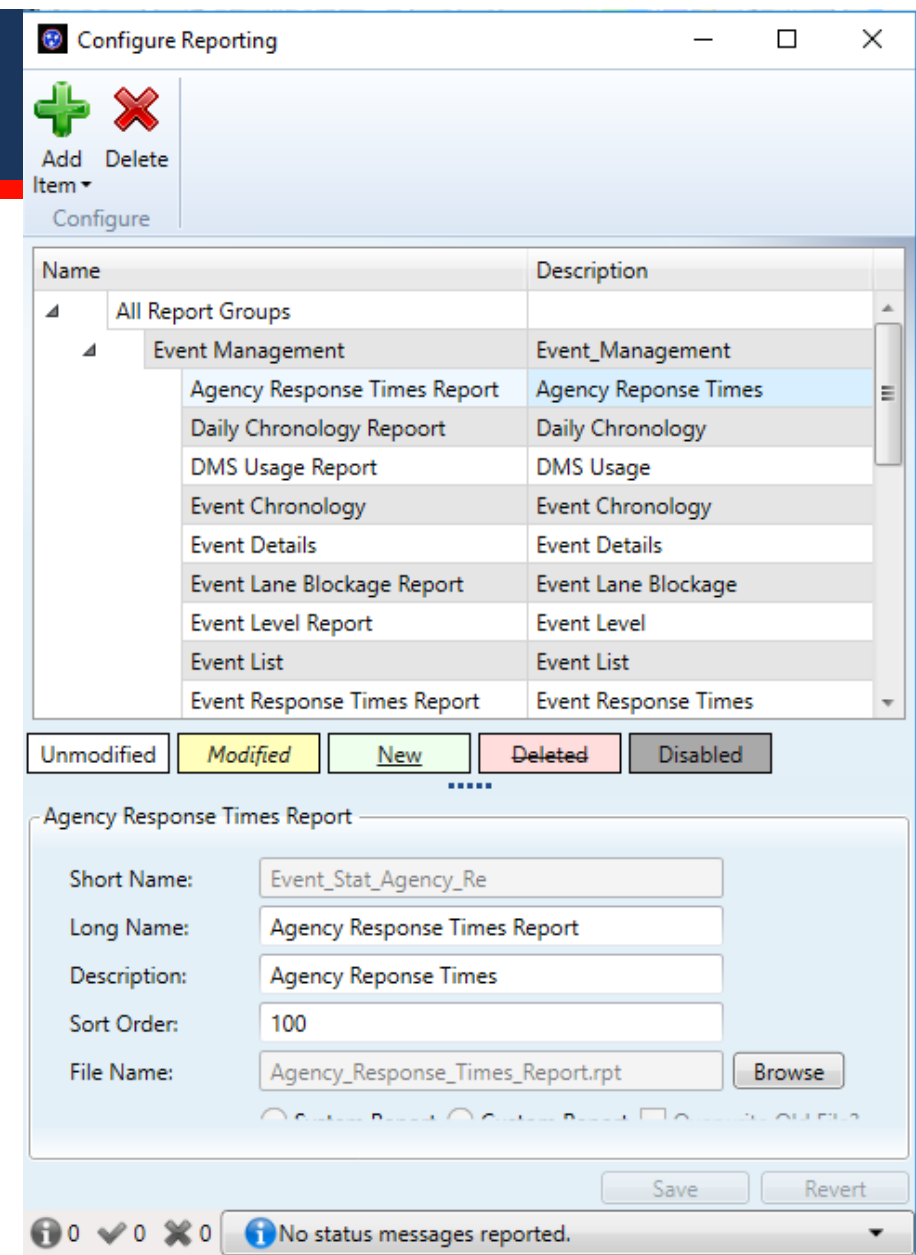
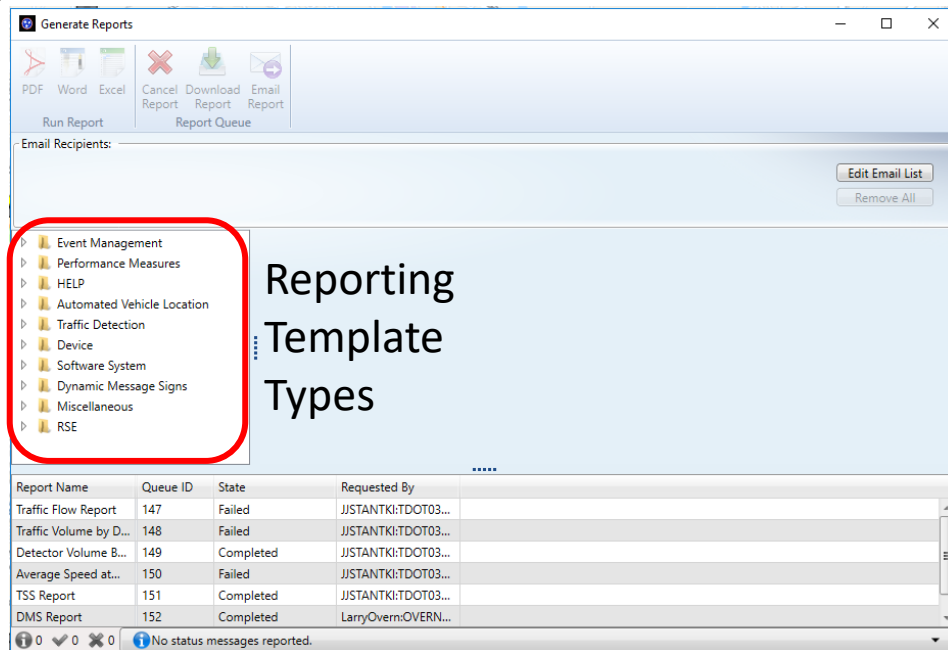
# Automated Vehicle Location (AVL)

- Cisco IE 829 routers connect HELP trucks to operator's map
- Application developed using Cisco Kinetic
- Facilitate capabilities for operators to enter incidents
- Additional future benefits



# Reporting

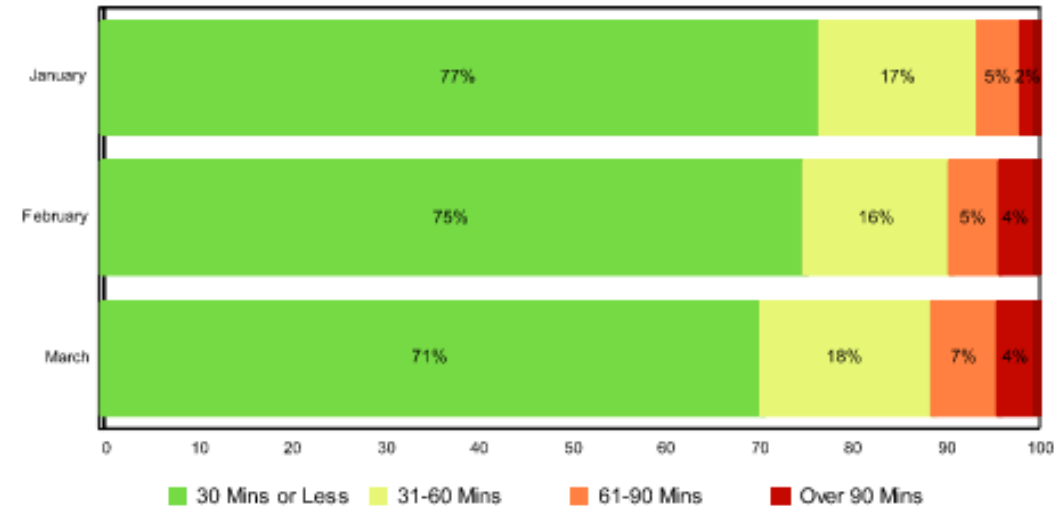
- A wide variety of report templates that can export reports
- These templates are initially grouped by similar type or functionality but are configurable



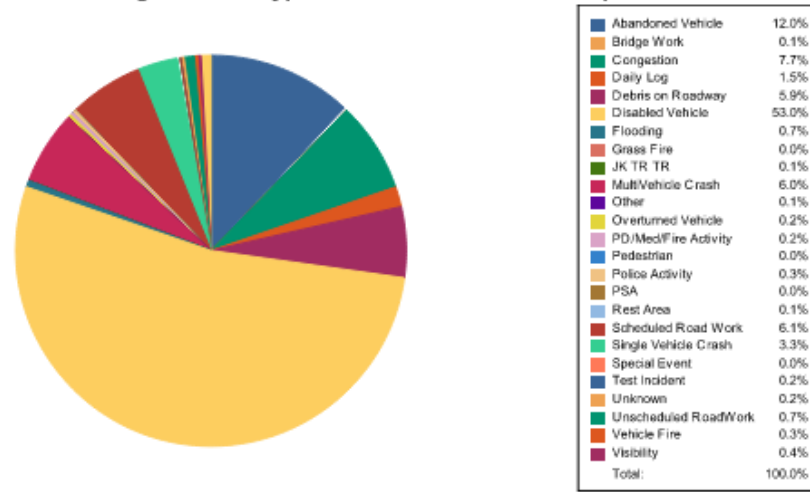
# SWCS Performance Metrics

- Developed in Crystal Reports
- Quarterly Performance Measures Report
- Performance Measures for HELP Truck Operations

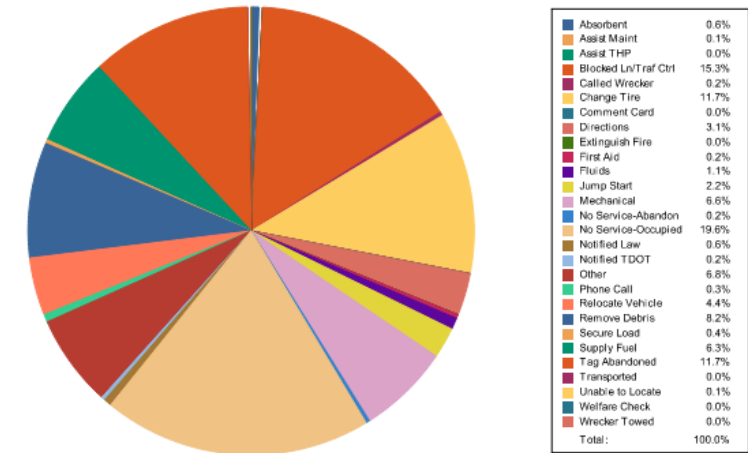
Lane Blockage Clearance Times - with HELP Truck Response



Percentage of event types for all events in current quarter



Percentage of Activity Types for HELP Truck Activities in Current Quarter

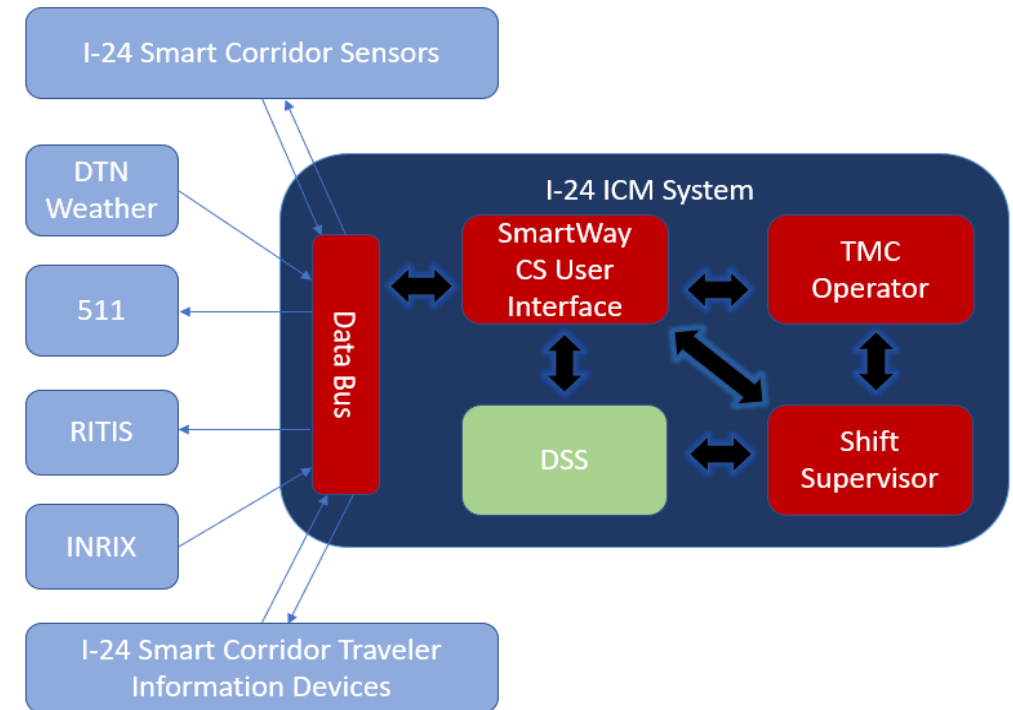


# ICM DSS - Goal: Maximize the Performance of the I-24 ICM System

## The ICM DSS:

- aggregates all relevant data generated about the corridor,
- fuses the data into its most meaningful and valuable representations, and
- provides actionable intelligence to the TMC Operators when appropriate and/or requested

  
Generates response plans with limited intervention!



# SmartWay Expansion: Paving the Way for the Future!

**Statewide  
Expansion of  
SmartWay ITS**

**Platform for  
Innovation  
and Research  
Grants**

**Overcoming  
Traffic  
Congestion  
Growth**

**Connected  
Automated  
Vehicles (CAV)**

**Over-height  
Detection**

**I-24 Smart  
Corridor**

**Construction  
Activities**

**Traveler  
Information**

**ICM DSS**

**Wrong Way  
Driver  
Detection**

## Contact Info:

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615.253.6705, [lee.j.smith@tn.gov](mailto:lee.j.smith@tn.gov)



Thank You!

